

# ISET

International School of Economics at TSU  
Policy Institute



## ENERGY MARKET REVIEW

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# ISSET POLICY INSTITUTE

## ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

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## ELECTRICITY MARKET REVIEW

- In the first and second quarters of 2021 power generation decreased compared to the same period in 2020.
- There was a decrease of electricity consumption in the first quarter of 2021 compared to 2020, however consumption increased on an annual basis in the second quarter.
- Interestingly, electricity consumption in Abkhazia increased substantially in both quarters, compared to the same periods in 2020.
- In the first and the second quarters of the year, the electricity imports increased substantially, mostly because of low generation and increasing consumption.
- In the first and the second quarters of 2021, the concentration in both the demand and the supply of the electricity market decreased compared to the corresponding periods of the last year.

## NATURAL GAS SUPPLY

- There was a decrease in natural gas supply in the first quarter of 2021 compared to 2020, however the supply increased on the annual basis in the second quarter.
- Unsurprisingly, all the natural gas supplied to the market was imported from Azerbaijan and Russia, with Azerbaijan holding the highest share in the total supply.
- There was an increase in natural gas import prices in both the first and the second quarters of 2021 on an annual basis.
- Both the retail and wholesale markets of the natural gas remained highly concentrated in both quarters.

## OIL PRODUCT SUPPLY

- In the first quarter of 2021 there was a slight decrease in the supply of oil products, however the supply increased in the second quarter significantly on an annual basis.
- The volume of petroleum trade increased in the first and the second quarters of the year, while diesel imports decreased in the first and increased in the second quarters 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.
- Import prices on petroleum and diesel plummeted in the first quarter of the year (compared to the first quarter of 2020), and increased significantly in the second one, mostly due to the extremely low prices in the second quarter of 2020.
- The price of reexported diesel decreased in the first and the second quarters of the year.

## ABBREVIATION USED

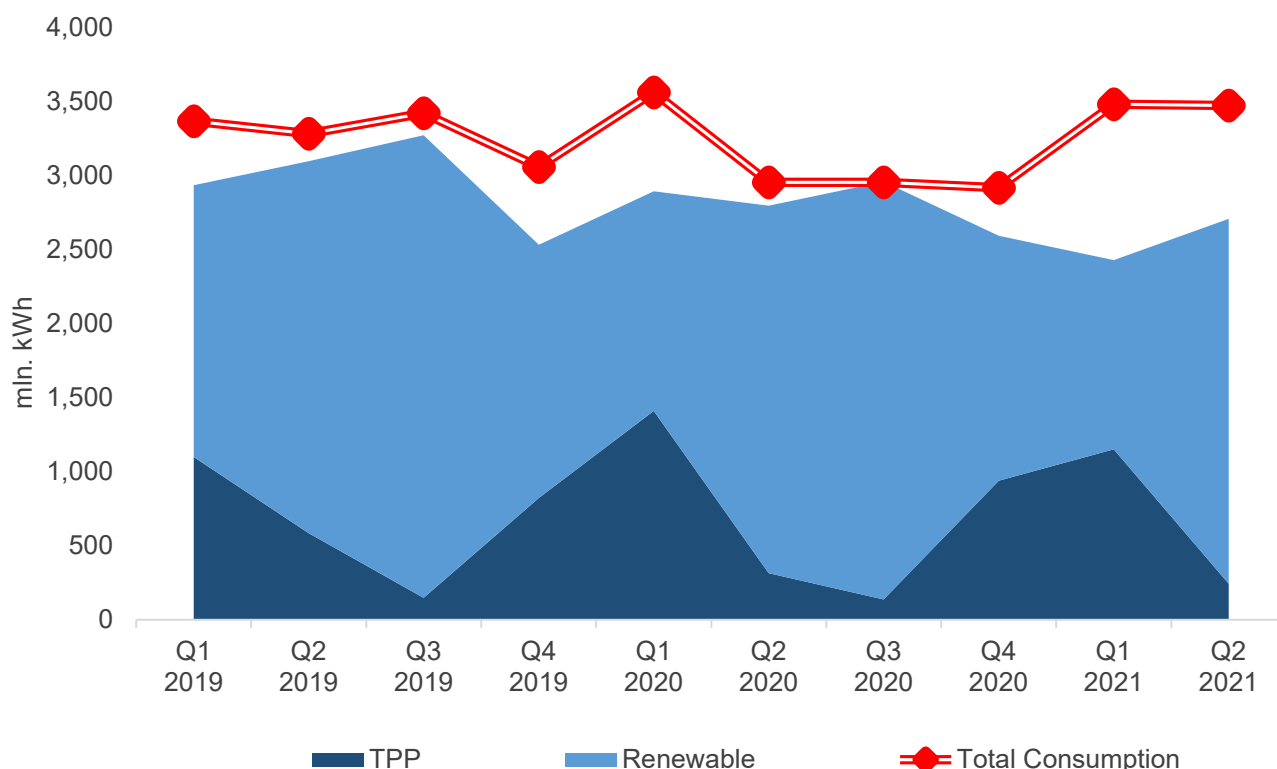
Mln – million  
Thous - thousand  
kWh – kilowatt-hour  
HPP – Hydro Power Plant  
WPP – Wind Power Plant  
TPP – Thermal Power Plant  
HHI - Hirschmann-Herfindahl Index

## GENERATION – CONSUMPTION – TRADE

In the first and the second quarters of 2021, Georgian power plants generated 2,429 mln. and 2,708 mln. kWh of electricity, respectively (Figure 1). This represents a 16.0% and 3.2% decrease in total generation compared to the corresponding periods of the previous year (in 2020, the total generation in Q1 was 2,893 mln. kWh and in Q2 it was 2,797 mln. kWh). On an annual basis, the reduction in generation in the first quarter of 2021 derived from a 18.3%, 13.8%, and 16.0% decline in thermal, hydro, and wind power generation, respectively. The decrease in production in the second quarter is related to the 22.8%, 0.7% and 2.6% decrease in thermal, hydro and wind power generation, respectively.

In the first and second quarters of 2021, electricity consumption on the local market amounted to 3,469 mln. (Q1) and 3,331 mln. kWh (Q2) (-0.6% and +15.5% compared to the first and second quarters of 2020, respectively) (Figure 1). Total power generation lagged the consumption by 1,040 mln. kWh in the first quarter of the year and by 623 mln. kWh in the second quarter. In percentage terms, in Q1 there was a generation deficit amounting to 42.8% of total generation, while in Q2 there was a generation deficit of 23.0% of total generation. In 2020 the difference between total generation and consumption resulted in a shortage in the first quarter of 598 mln. kWh, around 20.7% of the total generation, and in the second quarter shortage of 86 mln. kWh, around 3.1% of the total generation.

**FIGURE 1 | ELECTRICITY CONSUMPTION AND GENERATION**

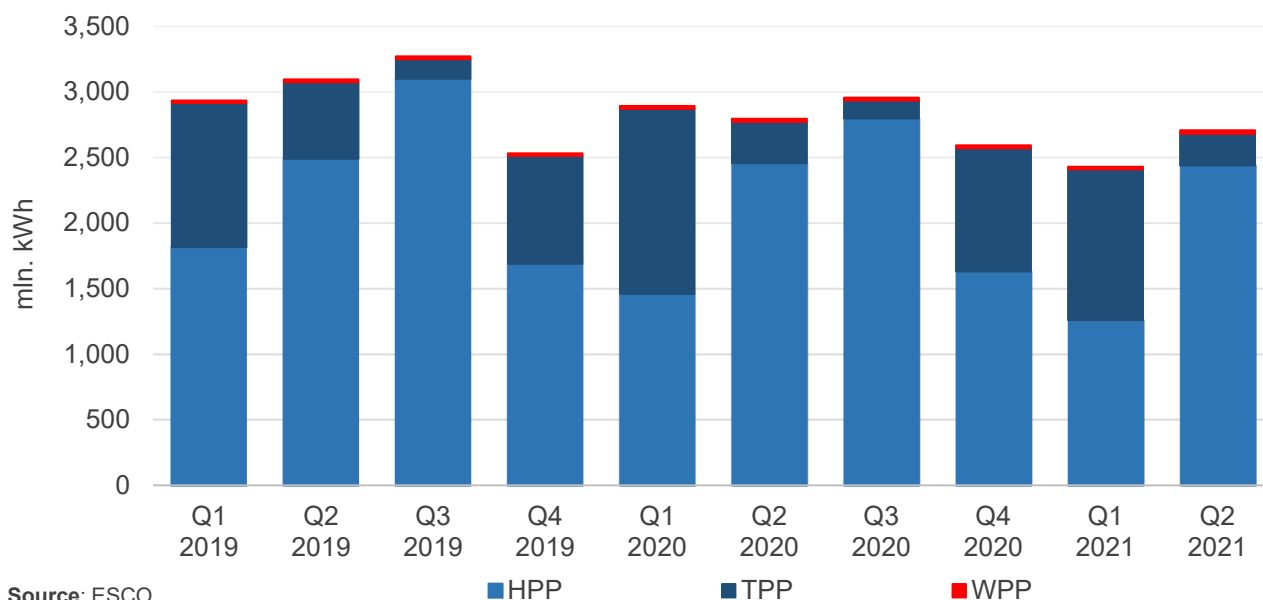


Source: Electricity System Commercial Operator (ESCO)

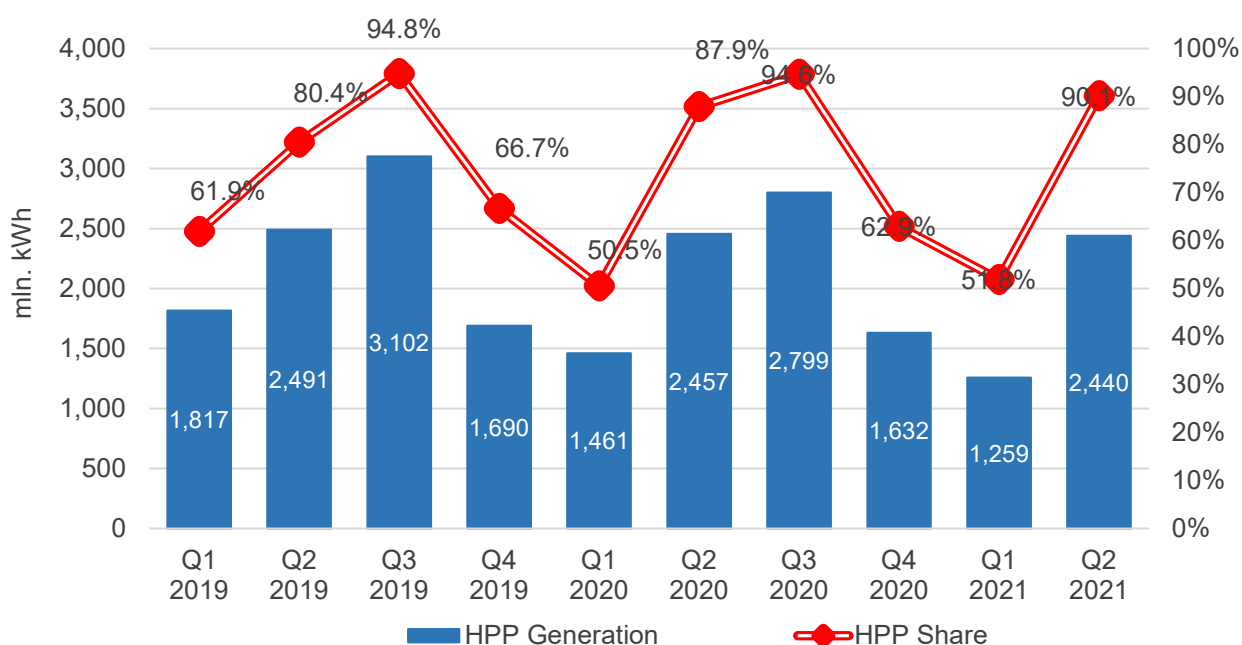
Electricity was largely generated from hydropower plants (HPPs), both in the first and second quarters of 2021. Hydropower generation amounted to 1,259 mln. (51.8% of the total) and 2,440

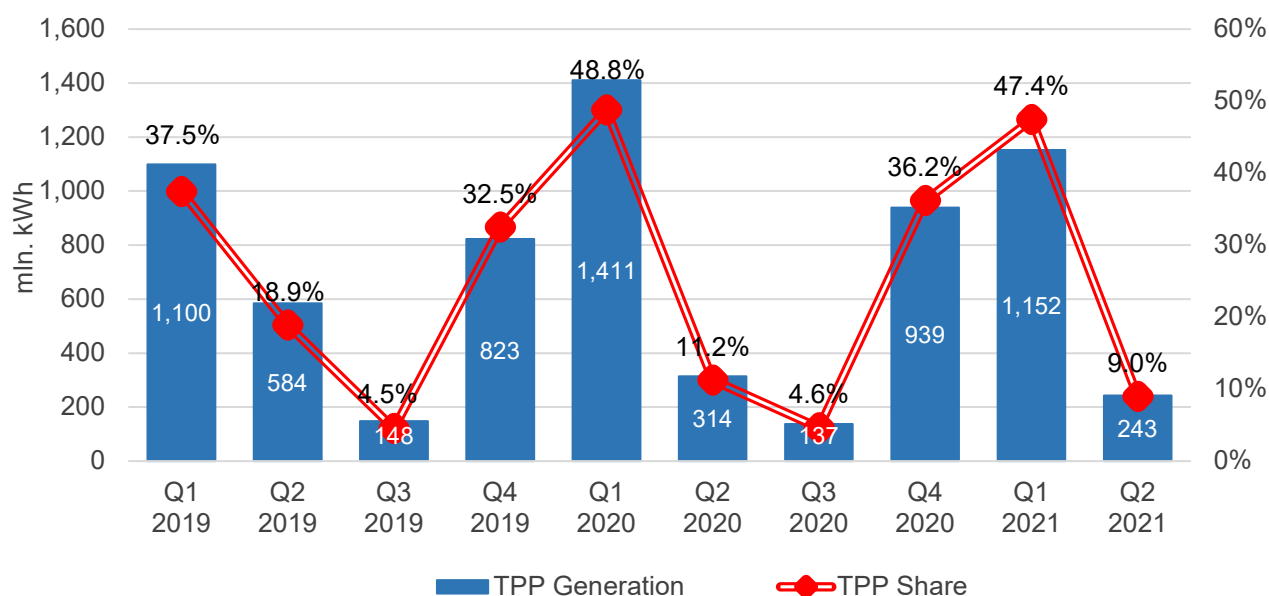
mln. kWh (90.1% of the total), respectively (Figure 3), while thermal power (TPP) generation reached 1,152 mln. (47.4% of the total) and 243 mln. kWh (9.0% of the total) (Figure 4). The remainder was generated by wind power plants (WPP) and amounted to 18 mln. (0.7% of the total) and 25 mln. kWh (0.9% of the total) in the first and the second quarters of the year (Figure 5).

**FIGURE 2 | ELECTRICITY GENERATION BY SOURCE**

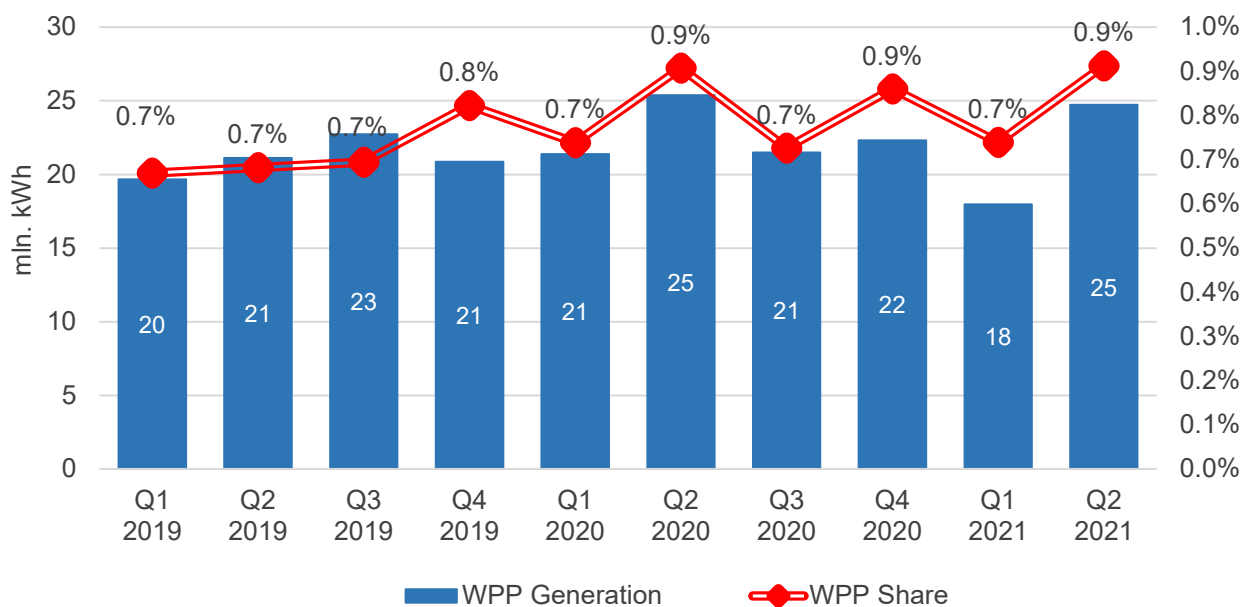


**FIGURE 3 | HPP GENERATION AND SHARE IN TOTAL GENERATION**



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

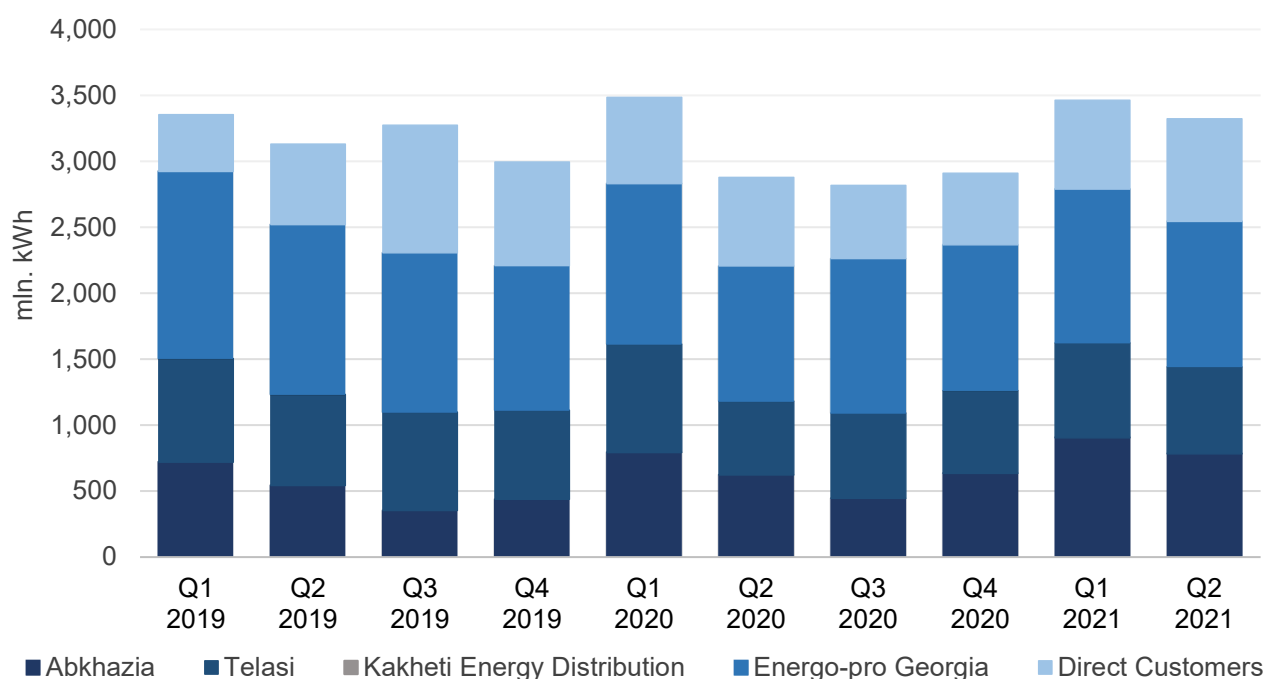
Source: ESCO

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

Source: ESCO

The total demand for electricity came from: Energo-Pro Georgia<sup>1</sup> (33.5% – 1,163 mln. kWh (Q1) and 33.0% – 1,101 mln. kWh (Q2)); Abkhazia (26.1% – 904 mln. kWh (Q1) and 23.5% – 783 mln. kWh (Q2)); Telasi (20.8% – 721 mln. kWh (Q1) and 19.8% – 661 mln. kWh (Q2)); and direct customers (19.4% – 674 mln. kWh (Q1) and 23.4% – 779 mln. kWh (Q2)) (Figure 6). Compared to the same period a year earlier, in the first quarter of 2021 demand from Abkhazia and direct customers increased by 14% and 3%, respectively while it decreased from Energo-Pro Georgia and Telasi by 4% and 12% respectively. In the second quarter, demand from Abkhazia, Energo-Pro Georgia, Telasi and direct customers increased by 26%, 8%, 18%, and 16%, respectively.<sup>2</sup>

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



Source: ESCO

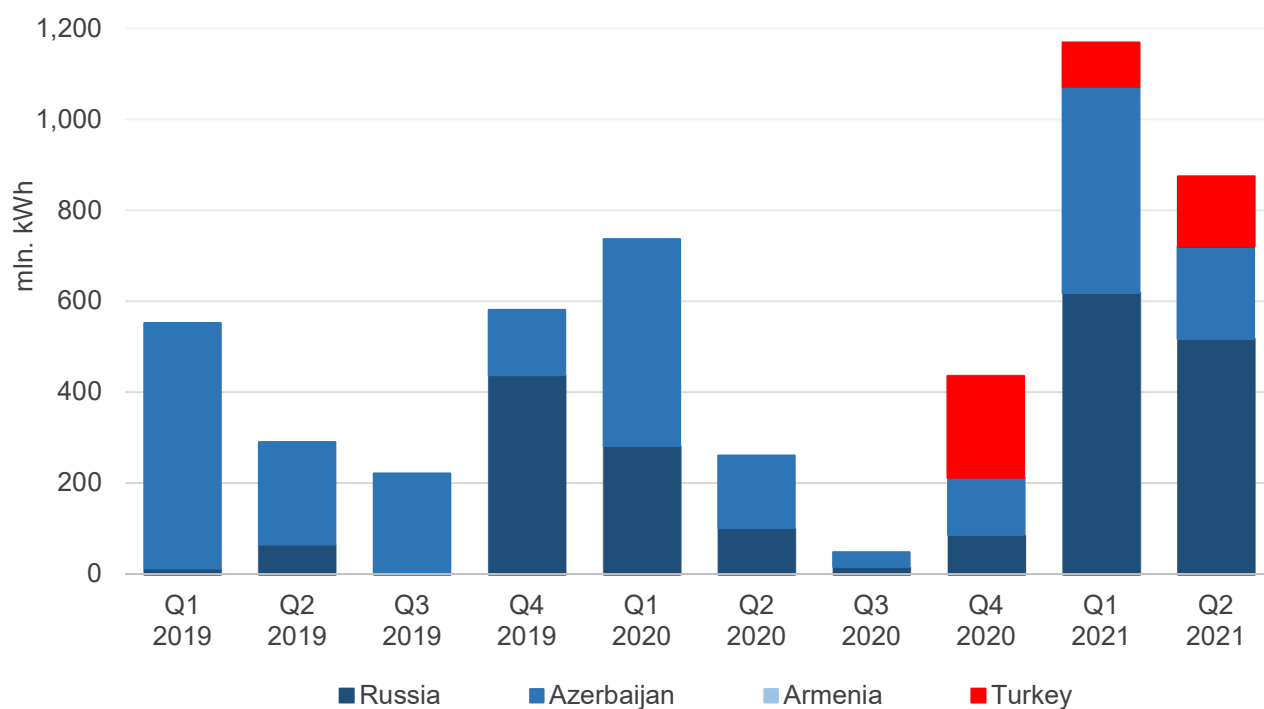
In the first and the second quarters of 2021, Georgia imported 1,167 mln. and 873 mln. kWh of electricity, respectively (compared to 737 mln. and 261 mln. kWh in 2020); 39% and 23% of which originated from Azerbaijan, 53% and 59% from Russia<sup>3</sup> and 8% and 18% from Turkey, respectively (Figure 7). During the same period, Georgia exported 1 mln. and 143 mln. kWh (compared to 0.5 and 72 mln. kWh of export, respectively, in 2020); 0% and 52% of which were exported to Turkey, 9% and 16% to Azerbaijan, while the remaining 91% and 32% went to Armenia (Figure 8). In the first quarter of 2021, there were 12 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 Kakheta 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.

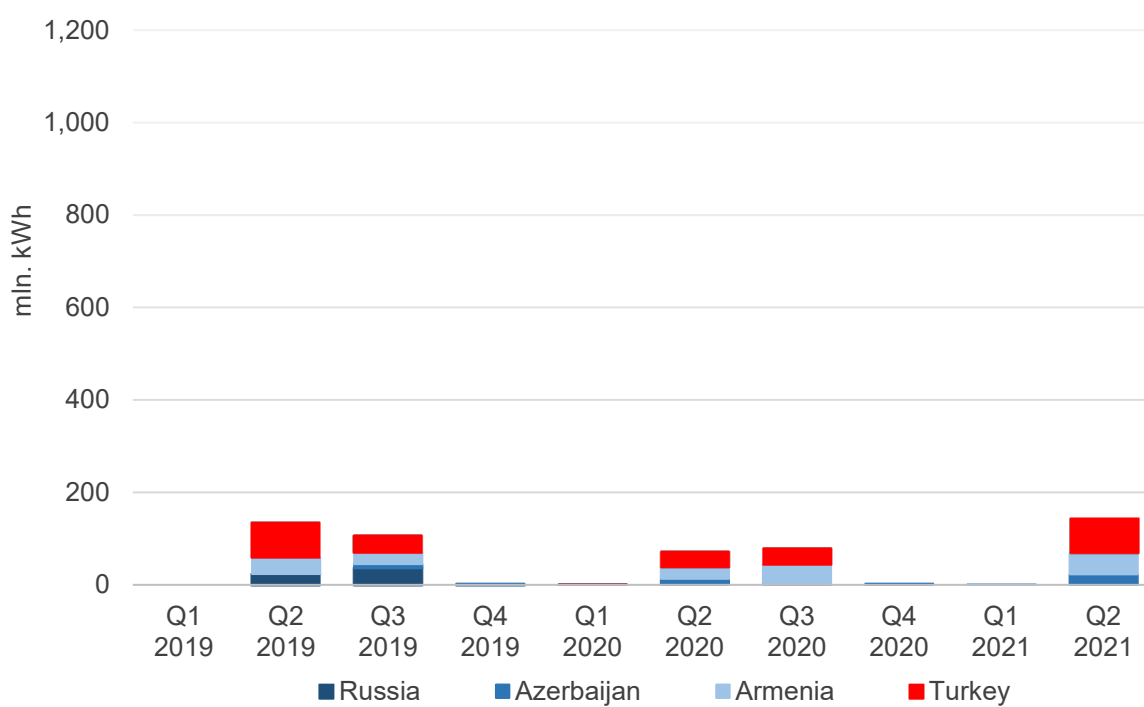
<sup>3</sup> It should be noted that 72% and 91% of Russian imports, respectively, went to Abkhazian consumption

**FIGURE 7 | ELECTRICITY IMPORTS**



Source: ESCO

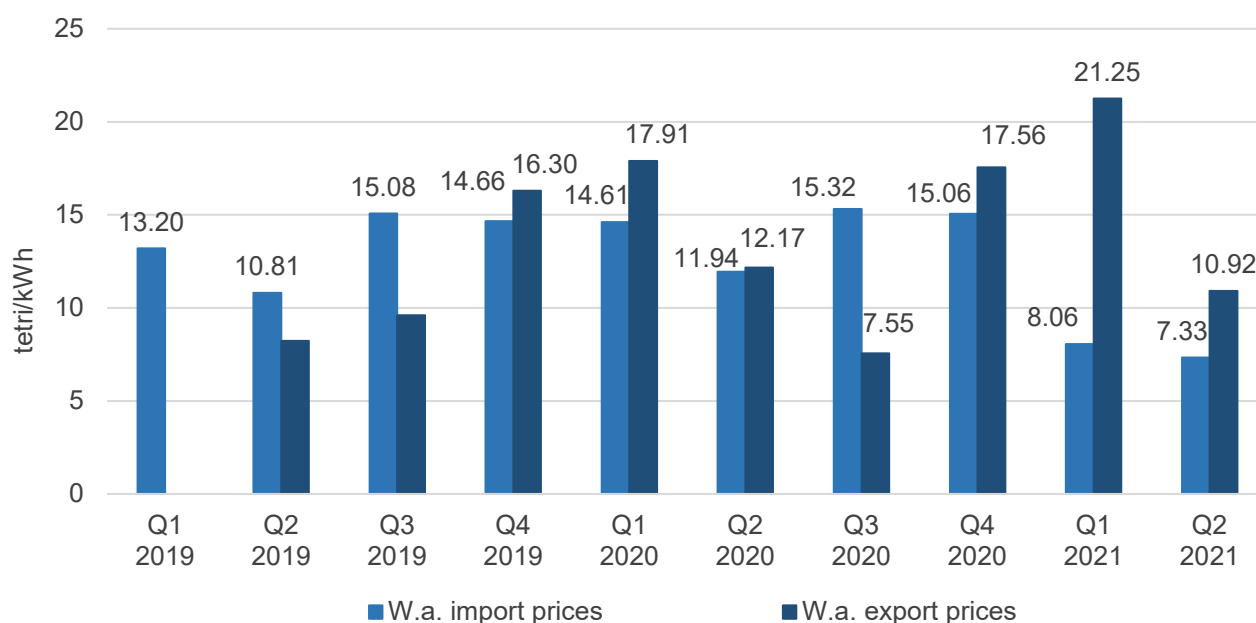
**FIGURE 8 | ELECTRICITY EXPORTS**



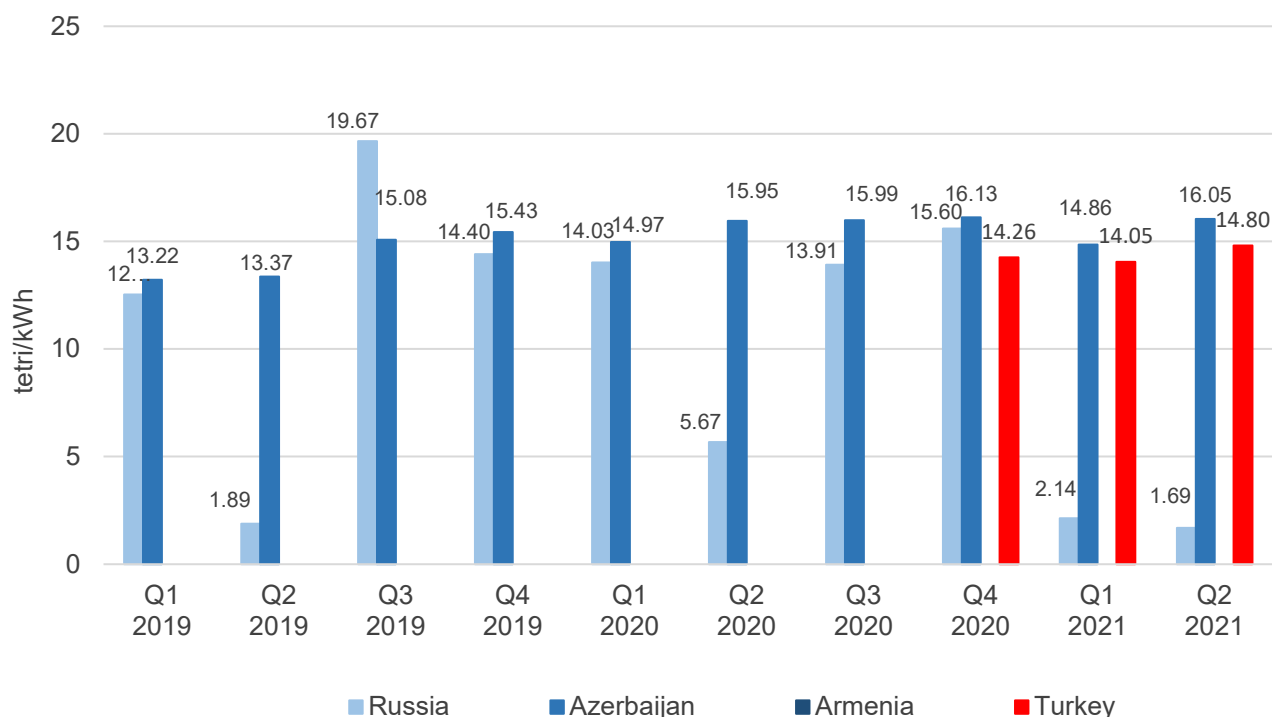
Source: ESCO

The weighted average electricity import price in the first and second quarters of 2021, on an annual basis, decreased by 52% and 44% in USD, respectively, whereas in GEL, the prices in both quarters decreased by 45% and 39%, (from 5.08 ¢ or 14.61 tetri per kWh (Q1) and 3.89 ¢ or 11.95 tetri per kWh (Q2) in 2020, to 2.45 ¢ or 8.06 tetri per kWh and 2.18 ¢ or 7.33 tetri per kWh in 2021). The annual weighted average electricity export price in the first quarter of 2021 increased by 3% in USD and by 19% in GEL (from 6.28 ¢ or 17.91 tetri per kWh in the first quarter of 2020 to 6.45 ¢ or 21.25 tetri per kWh by 2021) (Figure 10). While the export price in the second quarter of 2021 decreased by 16% in USD and by 10% in GEL (from 3.83 ¢ or 12.17 tetri per kWh in the second quarter of 2020 to 3.23 ¢ or 10.92 tetri per kWh by 2021).

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

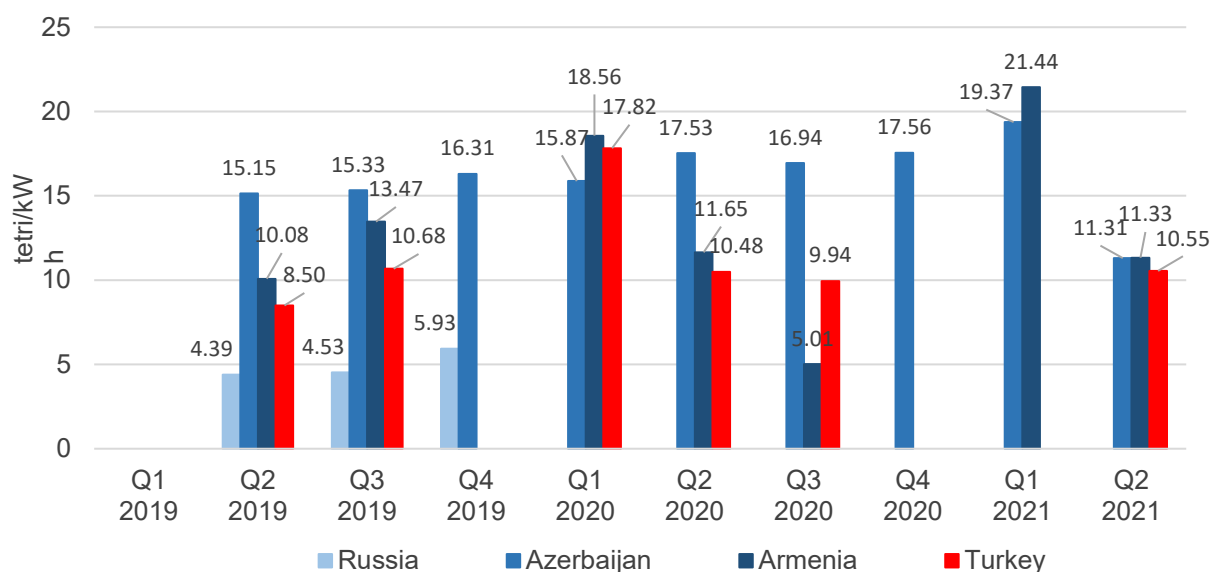


Import prices from Russia in the first quarter of the year stood at 0.65 ¢ or 2.14 tetri per kWh, while they were 4.51 ¢ or 14.86 tetri per kWh for imports from Azerbaijan. As for Turkey, the import prices in the first quarter stood at 4.27 ¢ or 14.05 tetri per kWh. In the second quarter, the Russian price amounted to 0.51 ¢ or 1.69 tetri per kWh, while the Azerbaijan price - to 4.78 ¢ or 16.05 tetri per kWh, and the Turkish price - to 4.40 ¢ or 14.80 tetri per kWh (Figure 10).

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


Source: ESCO

In the first quarter, export prices to Azerbaijan and Armenia stood at 5.89 ¢ or 19.37 tetri and 6.5 ¢ or 21.44 tetri, respectively. Whereas, in the second quarter, the price of exports to Azerbaijan, Armenia, and Turkey amounted to 3.33 ¢ or 11.31 tetri, 3.35 ¢ or 11.33 tetri, and 3.12 ¢ or 10.55 tetri (Figure 11).

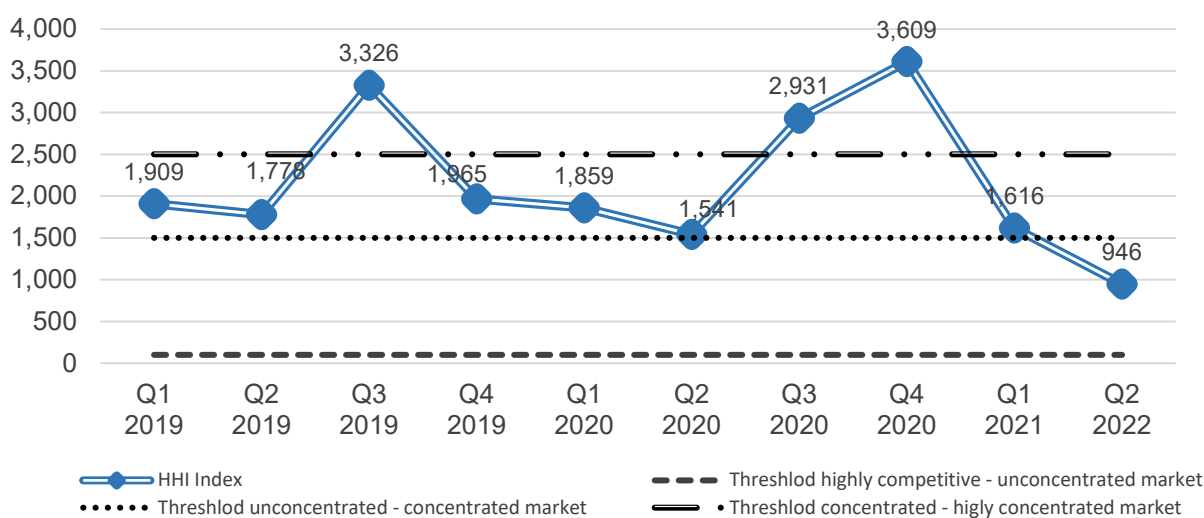
**FIGURE 11 | EXPORT PRICES BY COUNTRY**


Source: ESCO

## ELECTRICITY MARKET CONCENTRATION

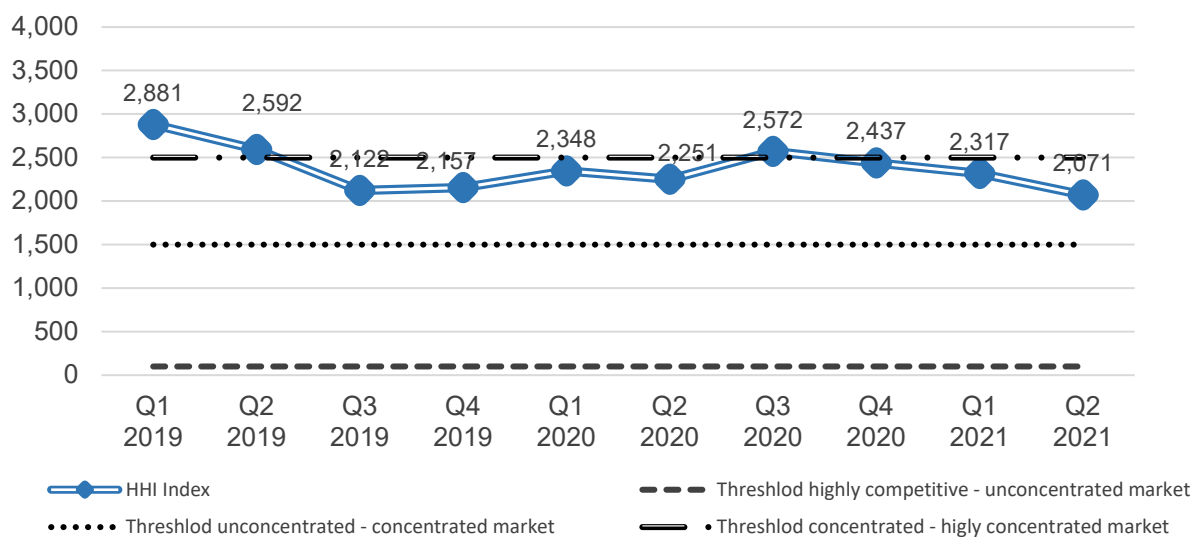
The Hirschman-Herfindahl Index (HHI) of market concentration is utilized to evaluate how competitive the generation and consumption segments of the market have been over the year. In the first quarter of 2021, the Georgian electricity generation market was well below the threshold of highly concentrated markets, with a HHI value of 1,616, and the second quarter it dropped below the threshold of concentrated market with a HHI value of 946. (Figure 12). Both values were lower than the corresponding values from 2020, with HHI at 1,859 and 1,541. In the consumer segment for the same period, the consumption indexes were just below the threshold for a highly concentrated market in the first and second quarters of the year, with a HHI values of 2,317 and 2,071 (lower the 2020 levels – 2,348 and 2,251) (Figure 13).

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



Source: ESCO

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

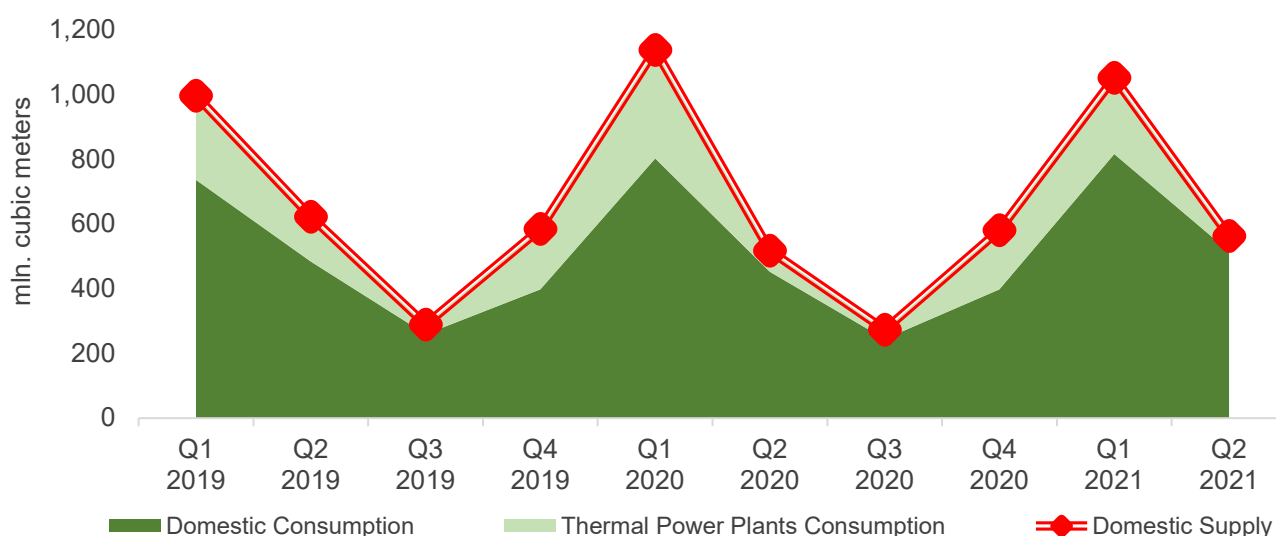


Source: ESCO

## NATURAL GAS SUPPLY: CONSUMPTION – TRADE

In the first and the second quarters of 2021, the total supply of natural gas was, respectively, 1,052 and 563 mln. cubic meters (-7.6% and +8.8% compared to the corresponding periods of 2020), of which 236 mln. and 47 mln. cubic meters (22.4% and 8.4% of total supply) were consumed by thermal power plants (29.9% and 27.4% decrease - 336 mln. and 65 mln. cubic meters - from 2020 corresponding quarters). The remainder was supplied to the domestic market (Figure 14).

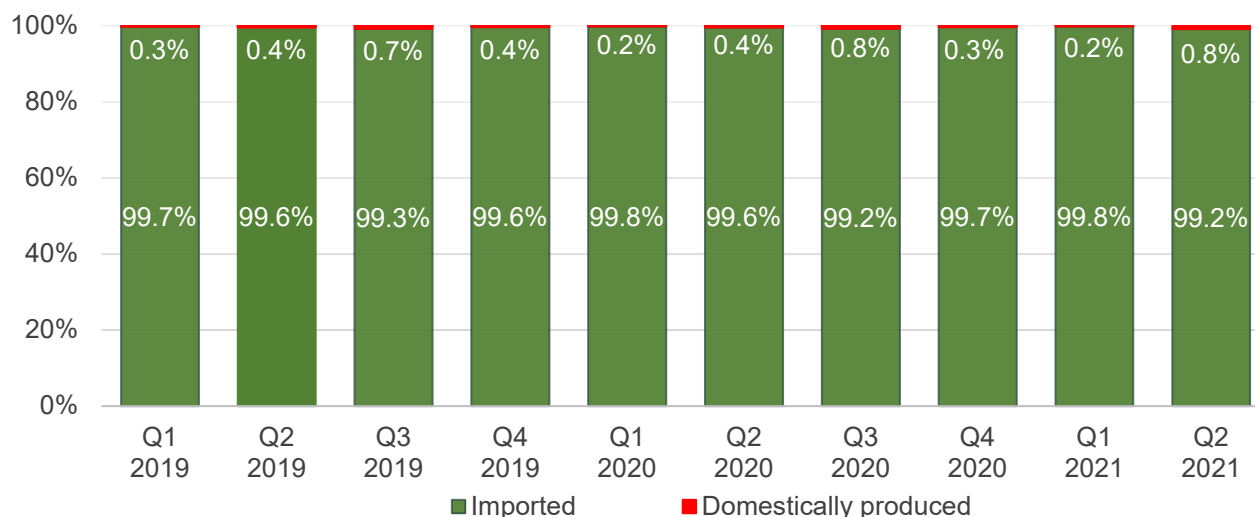
**FIGURE 14 | TOTAL SUPPLY AND CONSUMPTION OF NATURAL GAS**



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

Within these same periods of 2021, 99.8% (Q1) and 99.2% (Q2) of natural gas was imported, while the remaining amount was produced domestically (Figure 15).

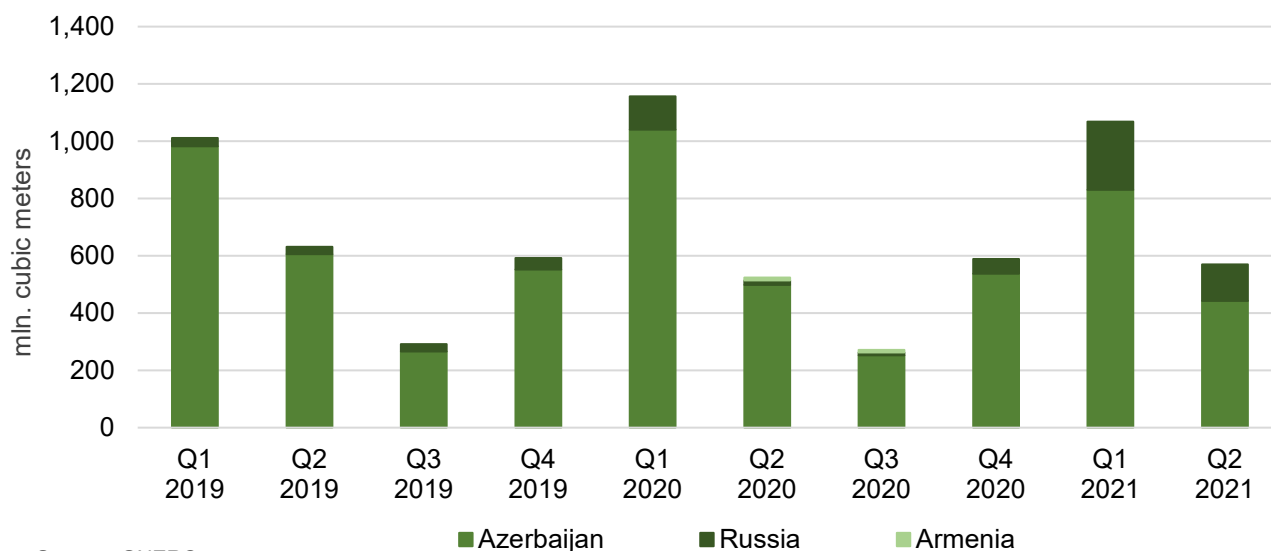
**FIGURE 15 | SHARE OF DOMESTICALLY PRODUCED AND IMPORTED GAS**



Source: GNERC

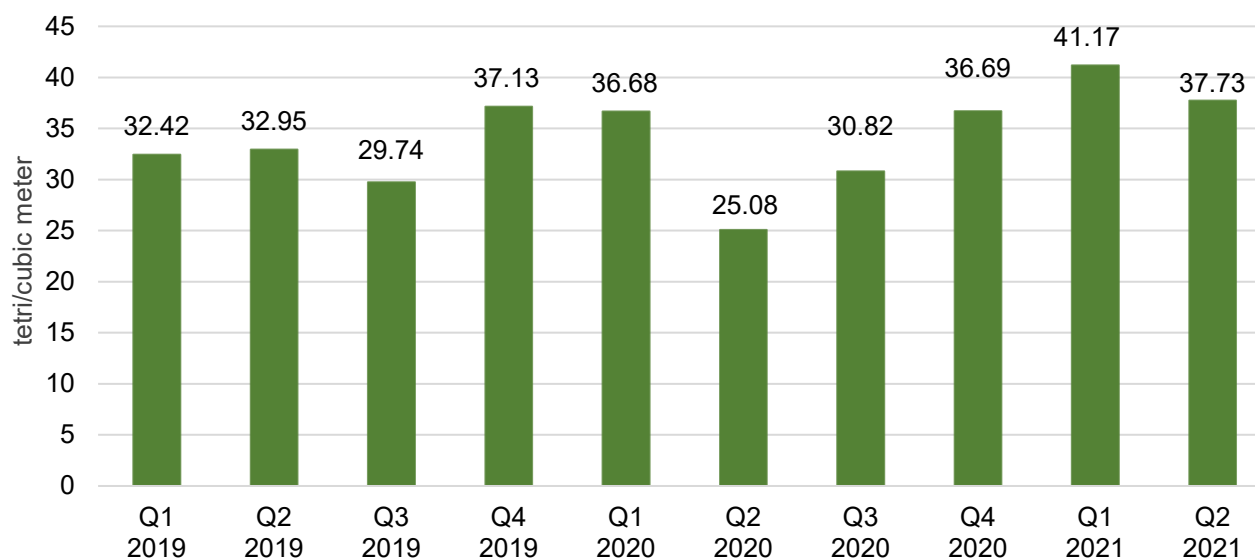
In the first and the second quarters of 2021, Georgia imported 1,068 and 570 mln. cubic meters of natural gas, respectively (-7.6% and +8.7% compared to 1,156 mln. and 524 mln. cubic meters of imports in the corresponding periods of 2020). 77.7% (Q1) and 77.5% (Q2) of the imports came from Azerbaijan, while an additional 22.3% (Q1) and 22.5% (Q4) came from Russia (Figure 16).

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



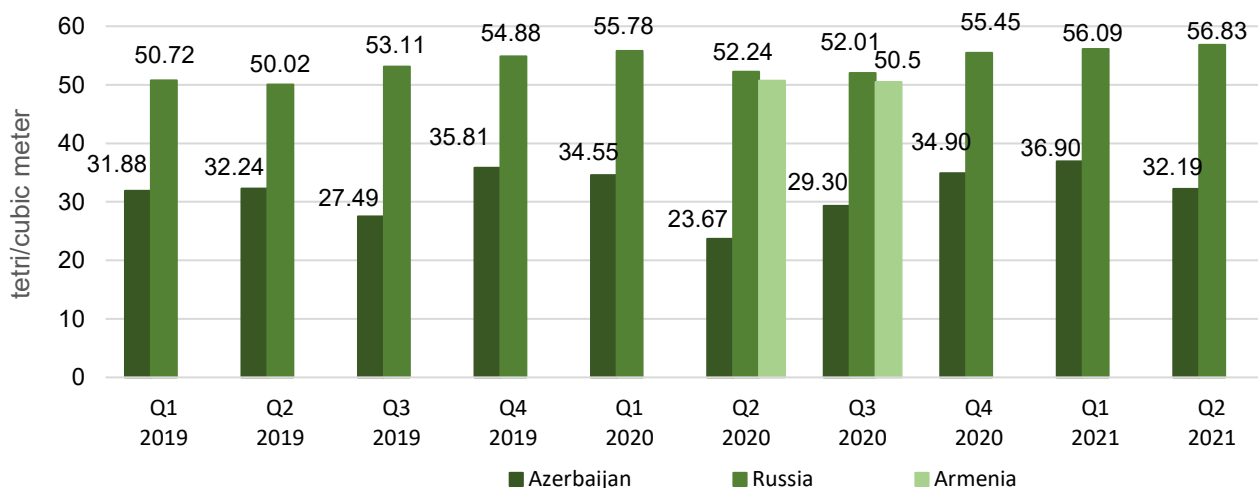
The weighted average natural gas import price in USD decreased by 2.0% and increased 40.8% in the first and second quarters of the year on an annual basis. The GEL price increased by 12.2% in the first quarter and increased by 50.5% in the second quarter of the year (from 12.73 ¢ or 36.68 tetri per cubic meter (Q1) and 7.95 ¢ or 25.08 tetri per cubic meter (Q2) in 2020, to 12.48 ¢ or 41.17 tetri per cubic meter and 11.20 ¢ or 37.73 tetri per cubic meter in 2021) (Figure 17).

**FIGURE 17 | NATURAL GAS IMPORT PRICES**



In the first quarter of the year, import prices from Russia stood at 17.00 ¢ – 56.09 tetri – per cubic meter, against 11.19 ¢ – 36.90 tetri – per cubic meter for the gas imported from Azerbaijan. In the second quarter, the Russian price amounted to 17.00 ¢ – 56.83 tetri – per cubic meter, while the Azerbaijani price amounted to 9.52 ¢ – 32.19 tetri – per cubic meter (Figure 18).

**FIGURE 18 | NATURAL GAS IMPORTS**

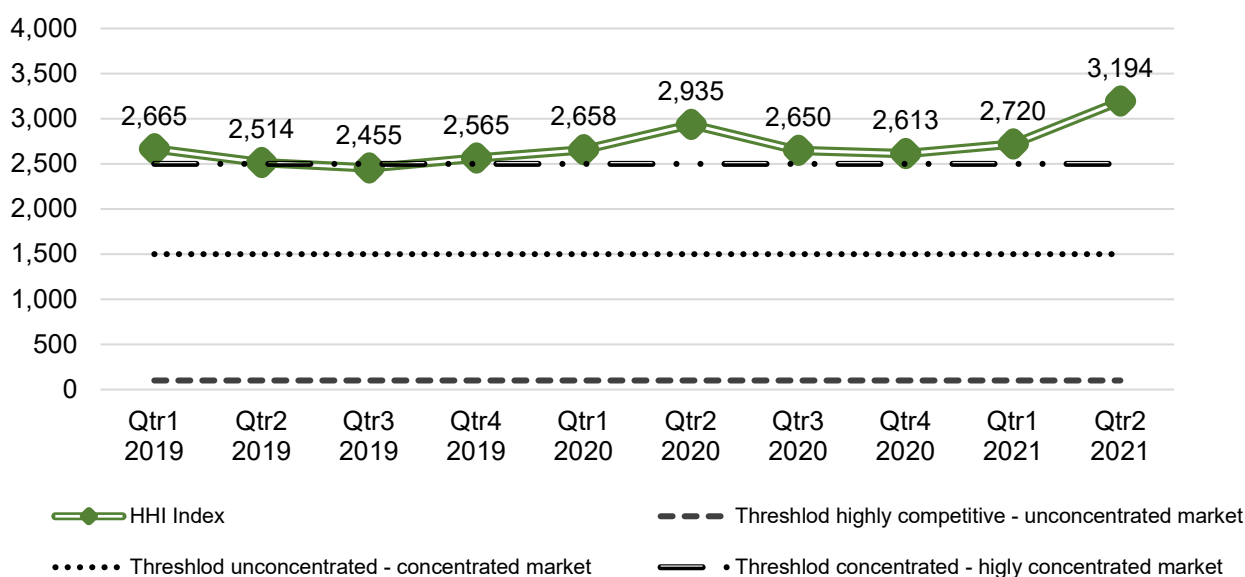


Source: GNERC

## NATURAL GAS MARKET CONCENTRATION

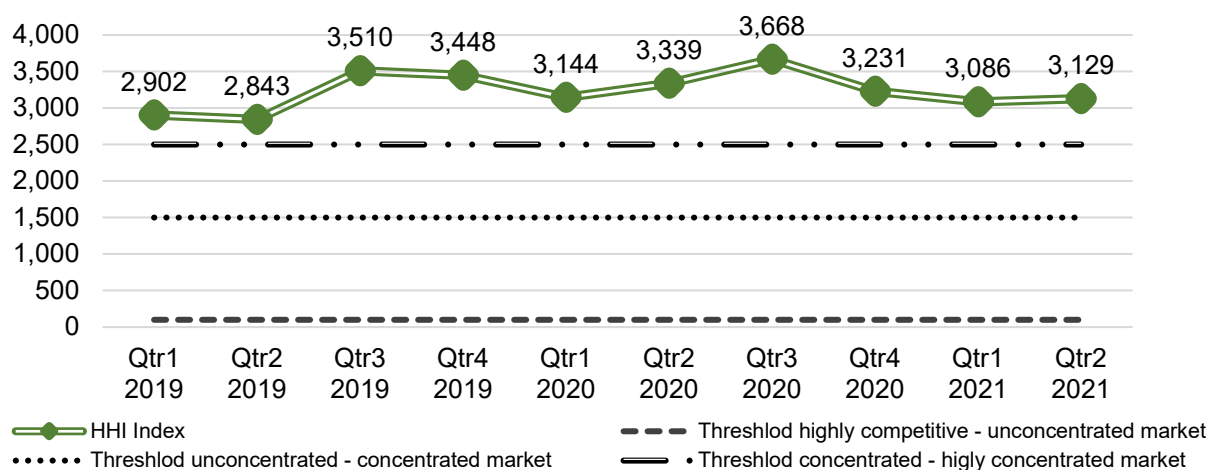
The Hirschman-Herfindahl Index (HHI) of market concentration is utilized to evaluate how competitive the retail and wholesale markets of natural gas have been over the year. In the first and second quarters of 2021, the retail market remained above the concentrated market threshold, with HHI values of 2,720 and 3,194, respectively (Figure 19). Q1 and Q2 values were higher than that for the first and second quarters of 2020, with HHI values of 2,658 and 2,935. 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 3,086 and 3,129 (both levels lower than the analogous level in 2020 – 3,144 (Q1) and 3,339 (Q2) (Figure 20).

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



Source: GNERC

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

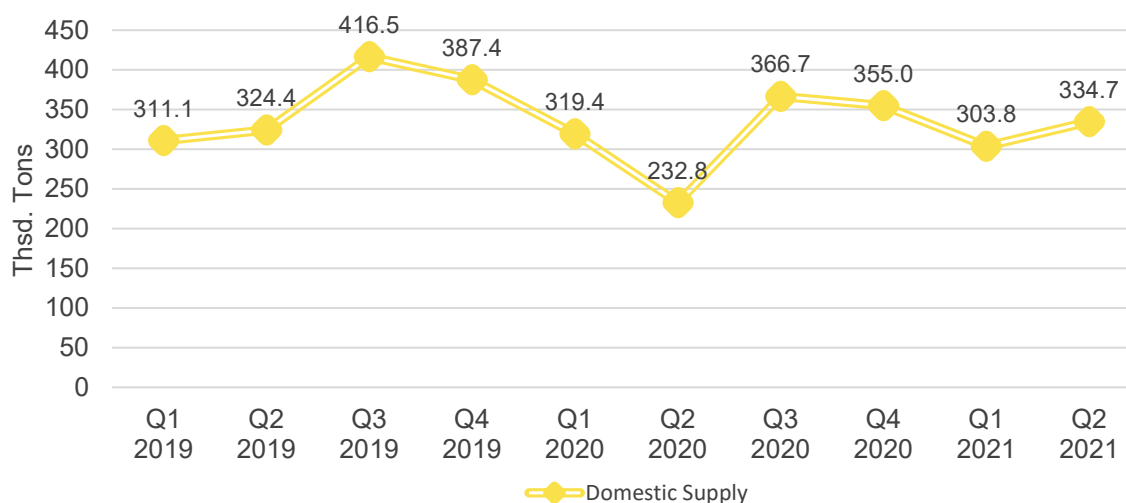


Source: GNERC

## OIL PRODUCT SUPPLY: CONSUMPTION – TRADE

In the first and second quarters of 2021, the total supply of oil products was 303.8 and 334.7 thousand tons, respectively (-4.8% and +43.8% compared to the same periods of 2020) (Figure 21).

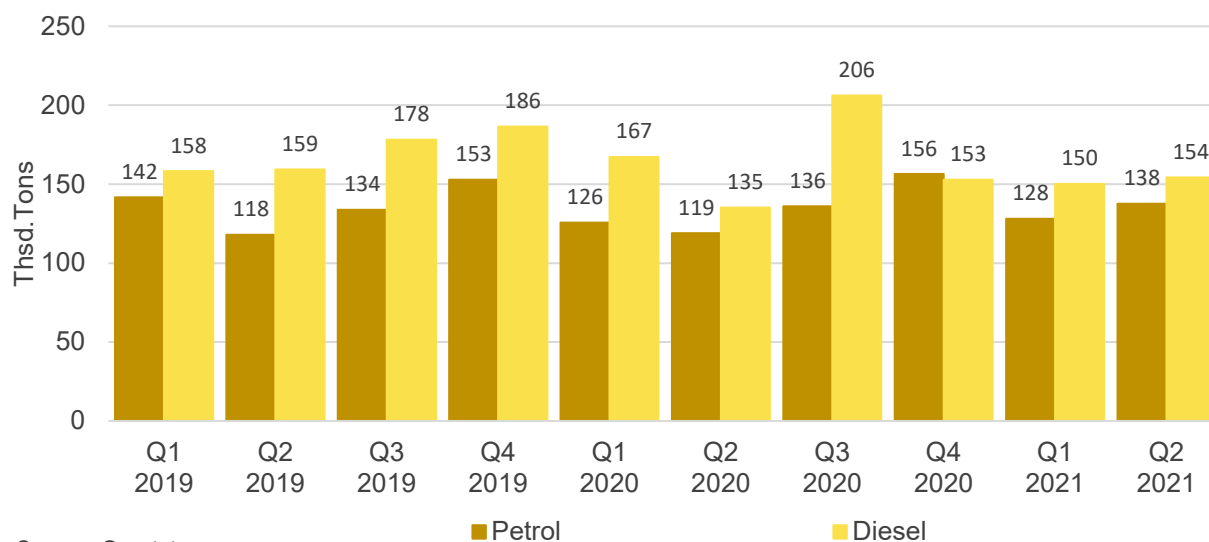
**FIGURE 21 | TOTAL SUPPLY OF OIL PRODUCTS**



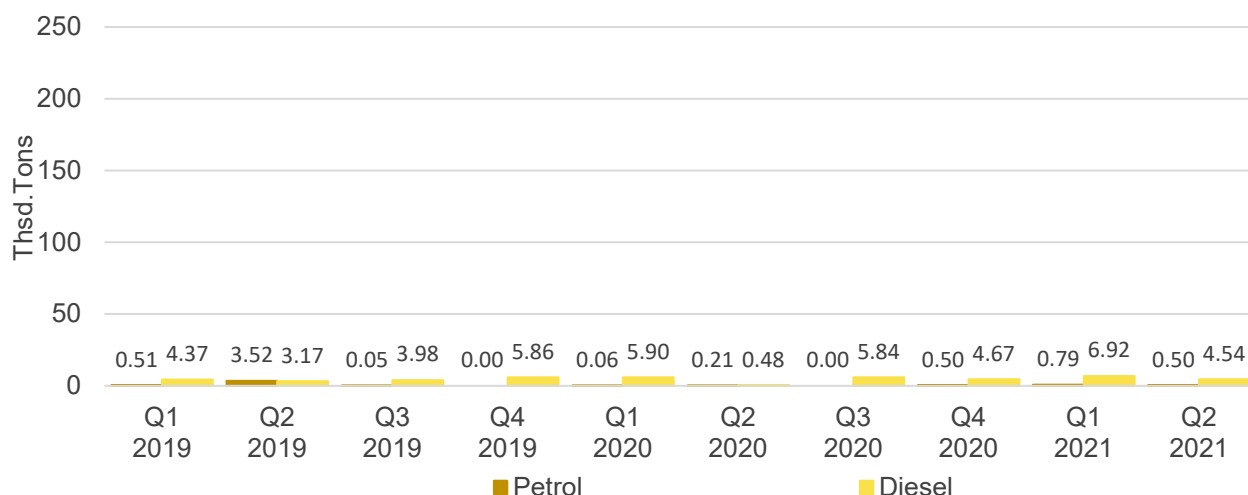
Source: Geostat

In the first two quarters of 2021, 128.02 and 137.61 thous. tons of petrol (+1.8% and +15.6% compared to the corresponding period in 2020), and 150.11 and 154.30 thous. tons of diesel were imported (-10.2% and +14.2% compared to 2020), respectively (Figure 22). In the same period, petrol export amounted to 0.79 and 0.50 thous. tons (compared to 0.06 and 0.21 thous. tons of export, respectively, in the same periods of 2020), while diesel exports were 6.92 and 4.54 thous. Tons (compared to 5.89 and 0.48 thous. tons of export, respectively, in the same periods of 2020) (Figure 23).

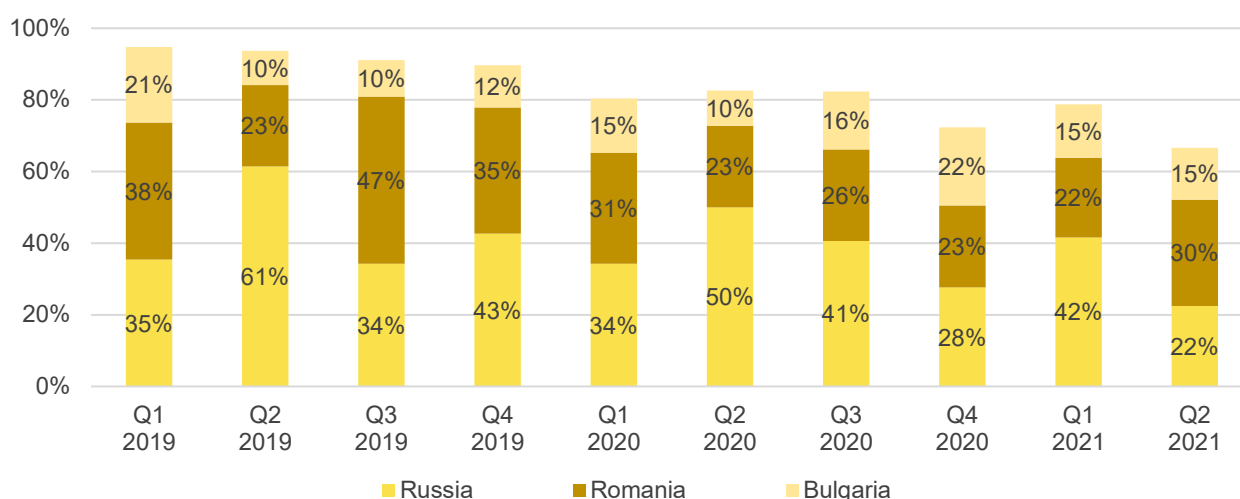
**FIGURE 22 | IMPORT OF PETROLEUM AND DIESEL**



Source: Geostat

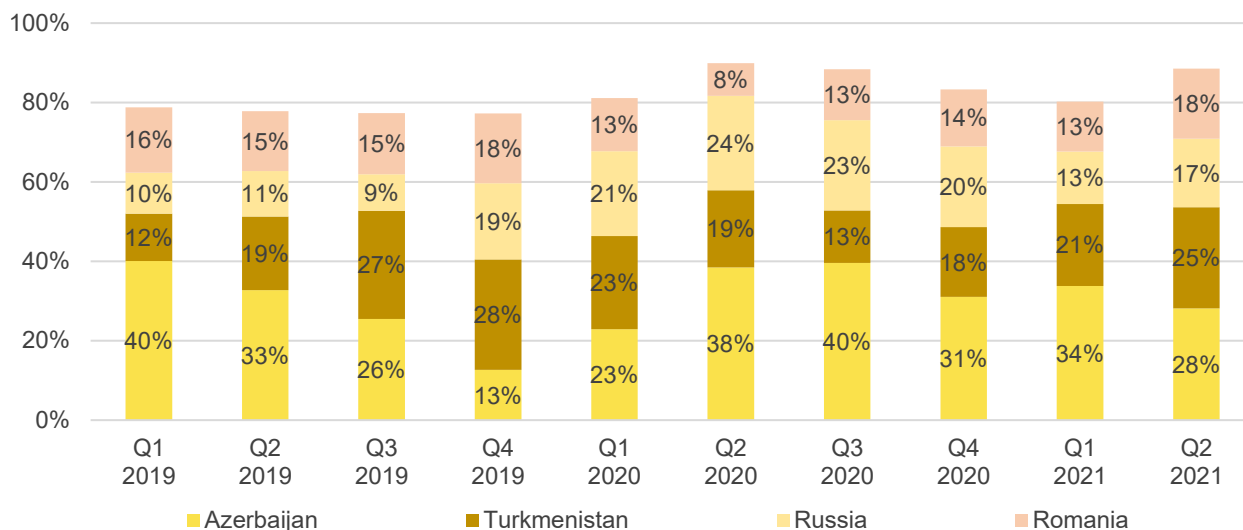
**FIGURE 23 | EXPORT OF PETROLEUM AND DIESEL**

In the first quarter of 2021, Georgian petroleum imports came from nine countries, however, 79% of total imports were provided by three major import countries, Russia (42%), Romania (22%), and Bulgaria (15%). In the second quarter of the year, Georgia imported from thirteen countries, however, 67% came from Russia (22%), Romania (30%), and Bulgaria (15%)<sup>4</sup> (Figure 24).

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

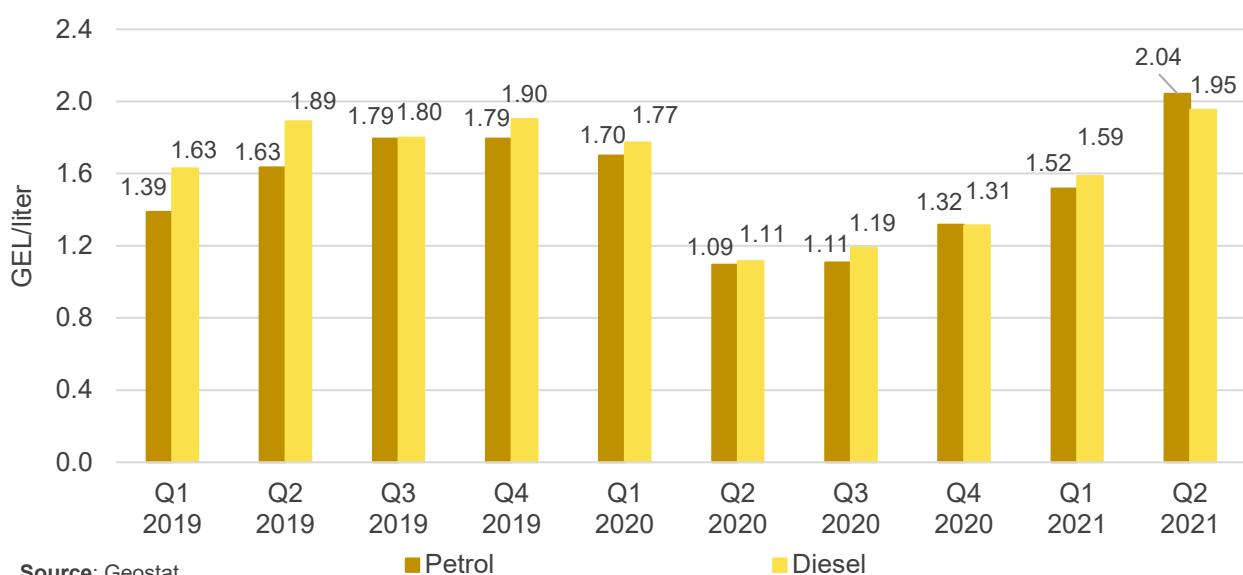
In the first quarter of 2021, Georgian diesel imports came from forty-countries, however, 81% of total imports were provided by four major import countries, Azerbaijan (34%), Turkmenistan (21%), Russia (13%), and Romania (13%). In the second quarter of the year, Georgia imported from thirty-eight countries, however, 89% came from Azerbaijan (28%), Turkmenistan (25%), Russia (17%), and Romania (18%). (Figure 25).

<sup>4</sup> Noteworthy, Turkmenistan contained 31% of the total imports in the second quarter of the year

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

Source: Geostat

The weighted average petroleum import prices in USD decreased by 22% and increased by 72% in the first and second quarters of 2021, on an annual basis, while the prices in GEL decreased by 11% and increased by 87%, respectively (from 59 ¢ – 1.70 GEL – and 35 ¢ – 1.09 GEL – per liter in the first and second quarters of 2020, respectively, to 46 ¢ – 1.52 GEL – and 60 ¢ – 2.04 GEL – per liter in 2021). The weighted average diesel import prices in USD decreased by 22% and increased by 62% in the first and second quarters of 2021, on an annual basis, whereas the prices in GEL decreased by 11% and increased by 75% in the first and second quarters (from 62 ¢ – 1.77 GEL – and 36 ¢ – 1.11 GEL – per liter in the first and second quarters of 2020, respectively, to 48 ¢ – 1.59 GEL – and 58 ¢ – 1.95 GEL – per liter in 2021) (Figure 26).

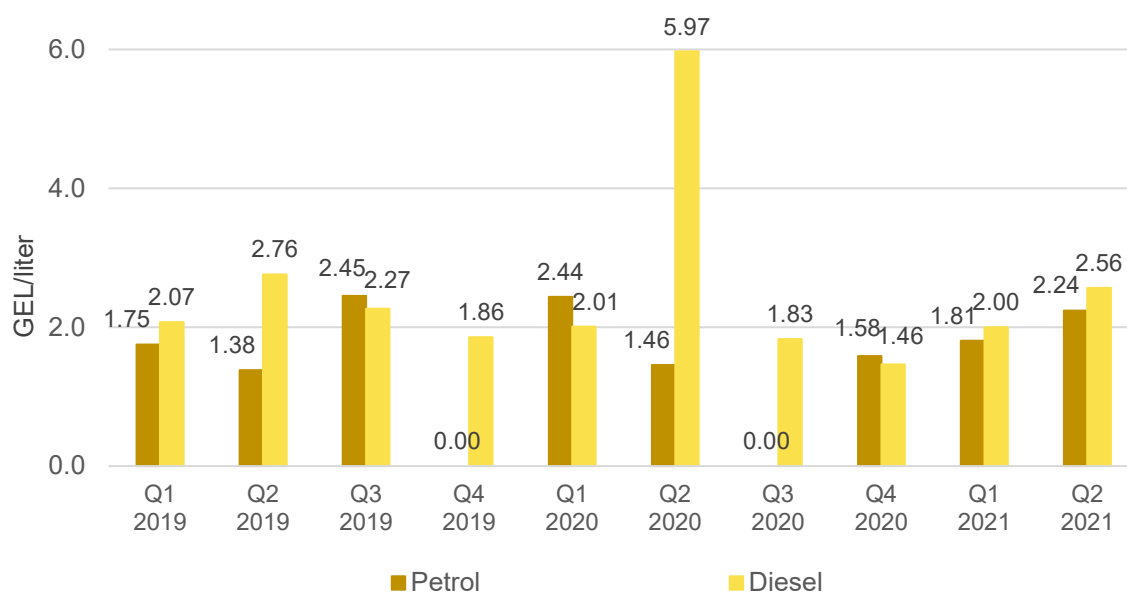
**FIGURE 26 | WEIGHTED AVERAGE IMPORT PRICE OF PETROLEUM AND DIESEL**

Source: Geostat

Considering petroleum export prices, the weighted average petroleum export price in USD decreased by 35% and increased by 39% annually in the first and the second quarters of 2021,

respectively ( from 84 ¢ – 2.44 GEL and 48 ¢ – 1.46 in the first and second quarters of 2020 to 55 ¢ – 1.81 GEL and 67 ¢ – 2.24 GEL in 2021, respectively). The weighted average diesel export price in USD decreased by 13% and 60% in the first and second quarters of 2021, on an annual basis, while the prices in GEL decreased by 0.3% and by 57%, respectively (from 69 ¢ – 2.01 GEL – and 109 ¢ – 5.97 GEL – per liter in the first and second quarters of 2020, to 61 ¢ – 2.00 GEL – and 76 ¢ – 2.56 GEL – per liter in 2021) (Figure 25).

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



Source: Geostat