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ENERGY MARKET REVIEW

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ELECTRICITY MARKET REVIEW

- In the third and fourth quarters of 2021 power generation increased compared to the same periods in 2020.
- There was an increase in electricity consumption in the third and the fourth quarter of 2021 on annual basis.
- In the third and the fourth quarters of the year, the electricity imports substantially decreased, while exports increased compared to the previous year.
- In the third and the fourth quarters of 2021, the concentration in the Demand of the electricity market decreased compared to the corresponding period of the last year, while on the Supply-side it increased in the third quarter and decreased in the fourth quarter of the year.

NATURAL GAS SUPPLY

- There was an increase in natural gas supply in the third and the fourth quarters of 2021, relative to 2020.
- Unsurprisingly, almost 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 the third and fourth quarters of 2021, relative to 2020.
- The HHI index for the retail market of the natural gas fell between concentrated and highly concentrated market in both quarters, it was less concentrated than in the corresponding period of the previous year. The wholesale market of the natural gas remained highly concentrated in both quarters, less concentrated than in the corresponding period of the previous year

OIL PRODUCT SUPPLY

- In the third and the fourth quarters of 2021, the total supply of oil products increased.
- The volume of petroleum trade increased in the third and slightly decreased in the fourth quarter of the year, while diesel imports decreased in the third and increased in the fourth quarter of the year.
- In both quarters, most of the Georgian petroleum imports came from Bulgaria, Romania, and Russia, while the majority of the diesel imports came from Azerbaijan, Russia, Turkmenistan, and Romania.
- Unsurprisingly, import prices on petroleum and diesel significantly increased in the third and the fourth quarters of the year.
- The price of reexported diesel also increased in the third and fourth quarters of the year

ABBREVIATION USED

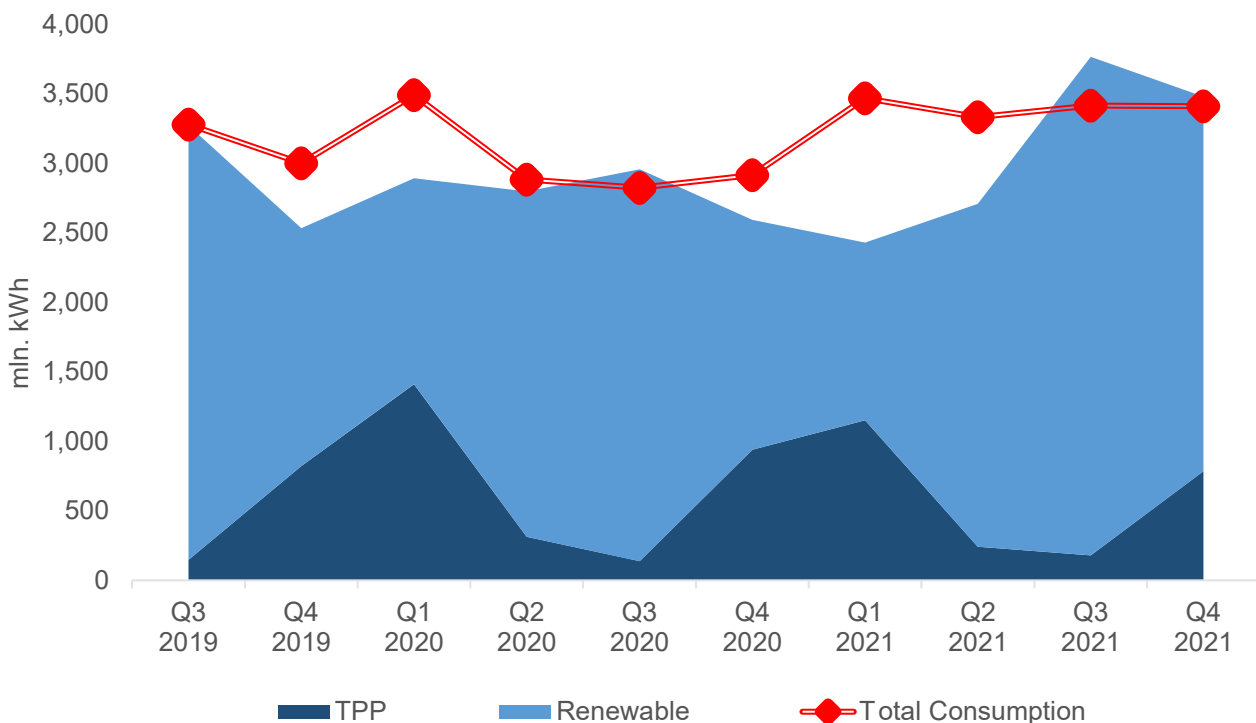
Mln	million
Thous	thousands
kWh	kilowatt-hour
HPP	Hydro Power Plant
WPP	Wind Power Plant
TPP	Thermal Power Plant
HHI	Hirschman-Herfindahl Index

GENERATION – CONSUMPTION – TRADE

In the third and the fourth quarters of 2021, Georgian power plants generated 3,766 mln. and 3,479 mln. kWh of electricity, respectively (Figure 1). This represents a 27.3% and 34.1% increase in total generation compared to the corresponding periods of the previous year (in 2020, the total generation in Q3 was 2,958 mln. kWh and 2,594 mln. kWh in Q4). On an annual basis, the increase in generation in the third quarter of 2021 was derived from a 30.8% and 27.4% increase in thermal and hydro power generation, respectively, more than offsetting the 8.5% decrease in wind power generation. The increase in production in the fourth quarter is related to the 3.4% and 63.7% increase in wind and hydro power generation, more than offsetting the 16.5% decrease in thermal power generation.

In the third and fourth quarters of 2021, electricity consumption on the local market amounted to 3,415 mln. (Q3) and 3,410 mln. kWh (Q4) (+20.9% and +17% compared to the third and fourth quarters of 2020, respectively) (Figure 1). Total power generation exceeded consumption by 351 mln.kWh and 69 mln.kWh in the third and the fourth quarters of the year, respectively. In percentage terms, in Q3 and Q4 there was a generation surplus amounting to 9.3% and 2% of total generation, respectively. In 2020 total generation exceeded consumption in the third quarter by 134 mln. kWh, around 4.5% of the total generation, and the difference between total generation consumption resulted in a shortage in the fourth quarter of 322 mln. kWh, around 12.4% of the total generation.

FIGURE 1 | ELECTRICITY CONSUMPTION AND GENERATION

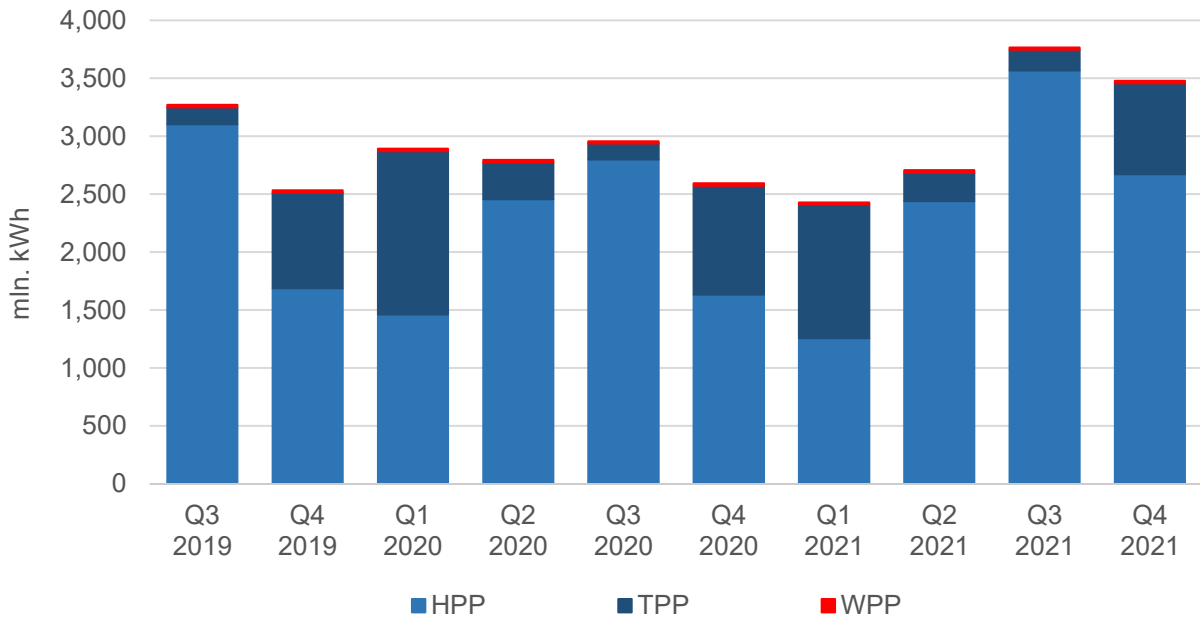


Source: Electricity System Commercial Operator (ESCO)

Electricity was largely generated from hydropower plants (HPPs), both in the third and fourth quarters of 2021. Hydropower generation amounted to 3,567 mln. (94.7% of the total) and 2,672 mln. kWh (76.8% of the total), respectively (Figure 3), while thermal power (TPP) generation reached 179 mln. (4.8% of the total) and 784 mln. kWh (22.5% of the total) (Figure 4). The remainder was generated

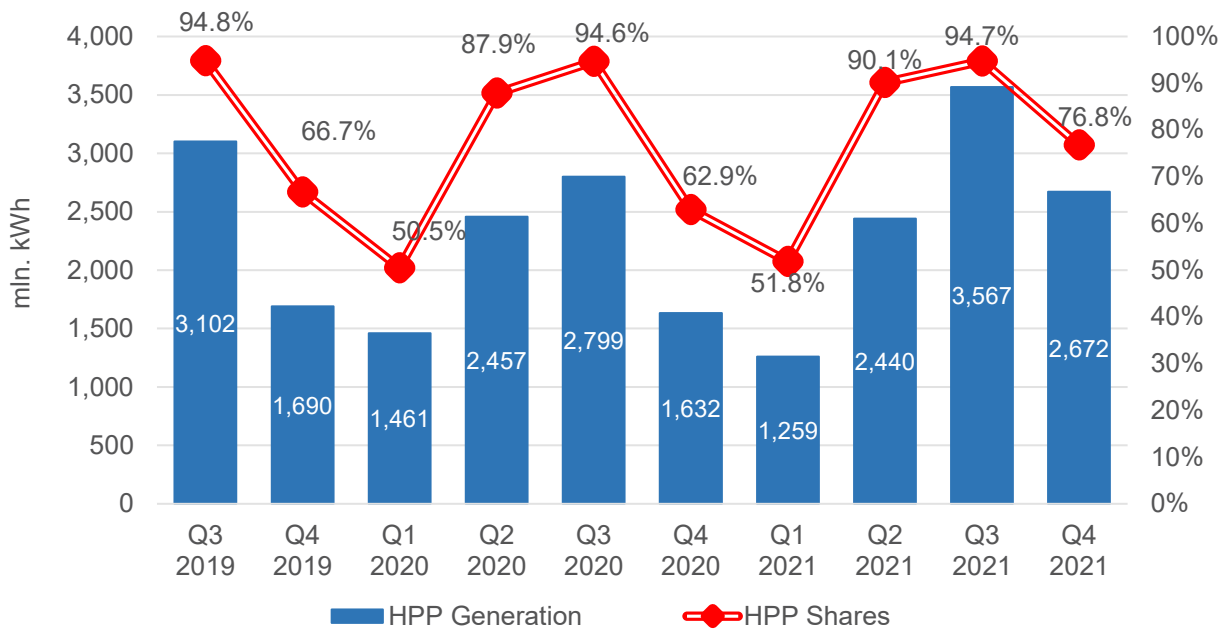
by wind power plants (WPP) and amounted to 20 mln. (0.5% of the total) and 23 mln. kWh (0.7% of the total) in the third and the fourth quarters of the year (Figure 5).

FIGURE 2 | ELECTRICITY GENERATION BY SOURCE



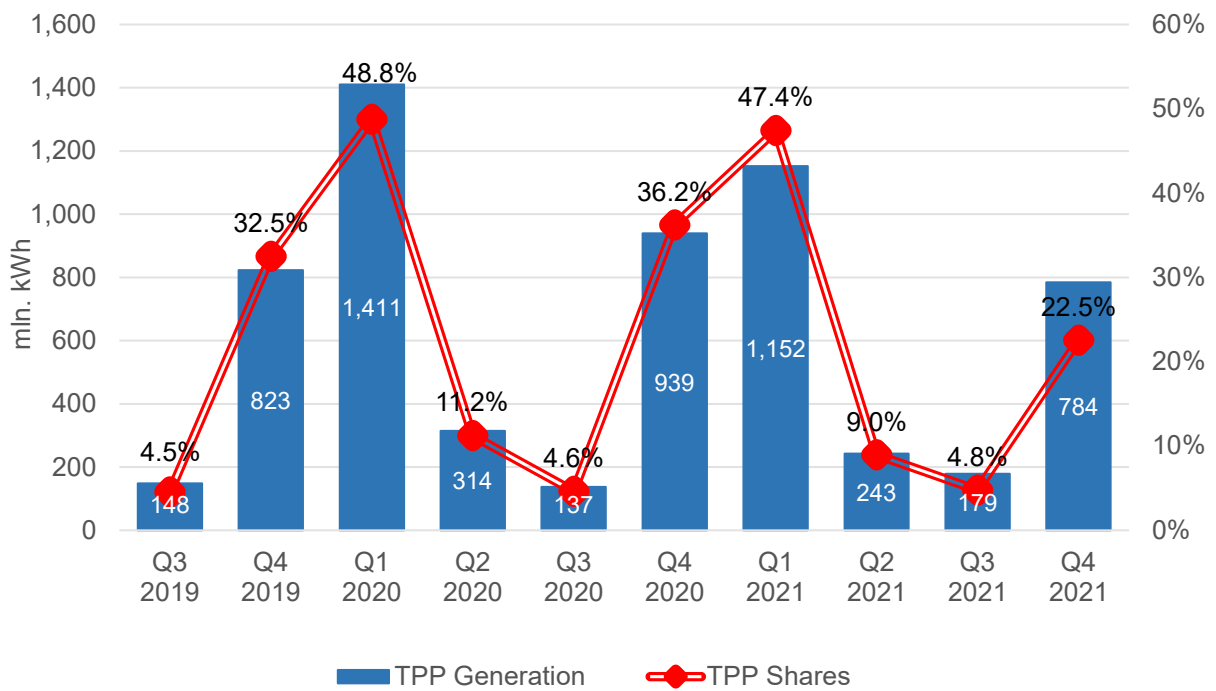
Source: ESCO

FIGURE 3 | ELECTRICITY GENERATION BY SOURCE



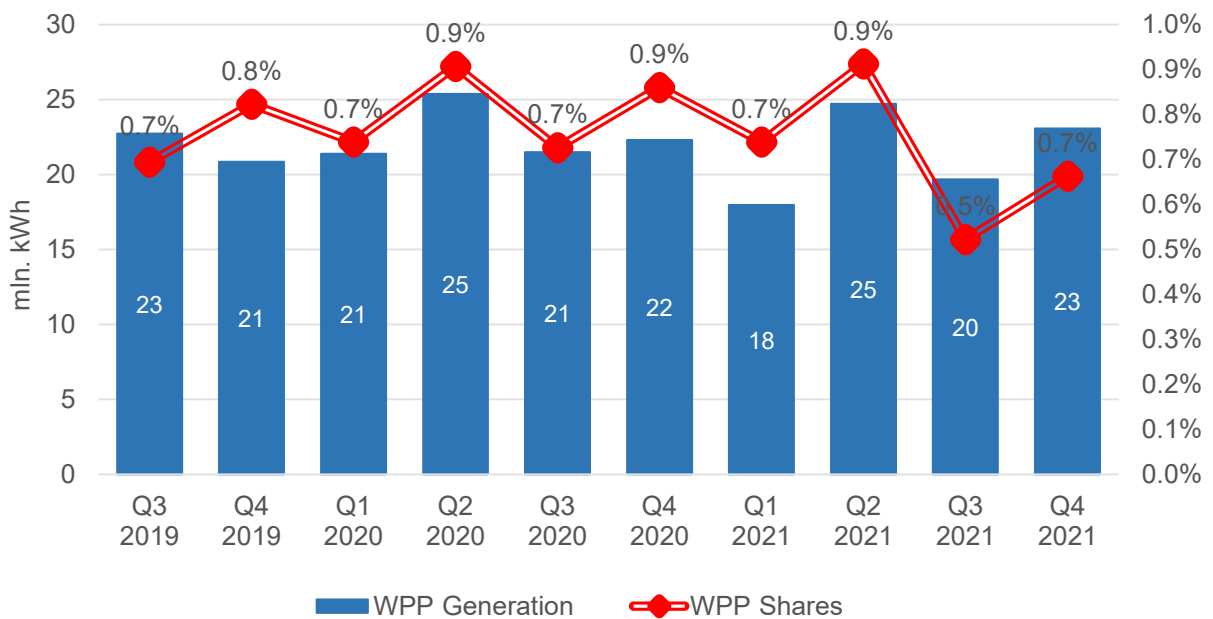
Source: ESCO

FIGURE 4 | TPP GENERATION AND SHARE IN TOTAL GENERATION



Source: ESCO

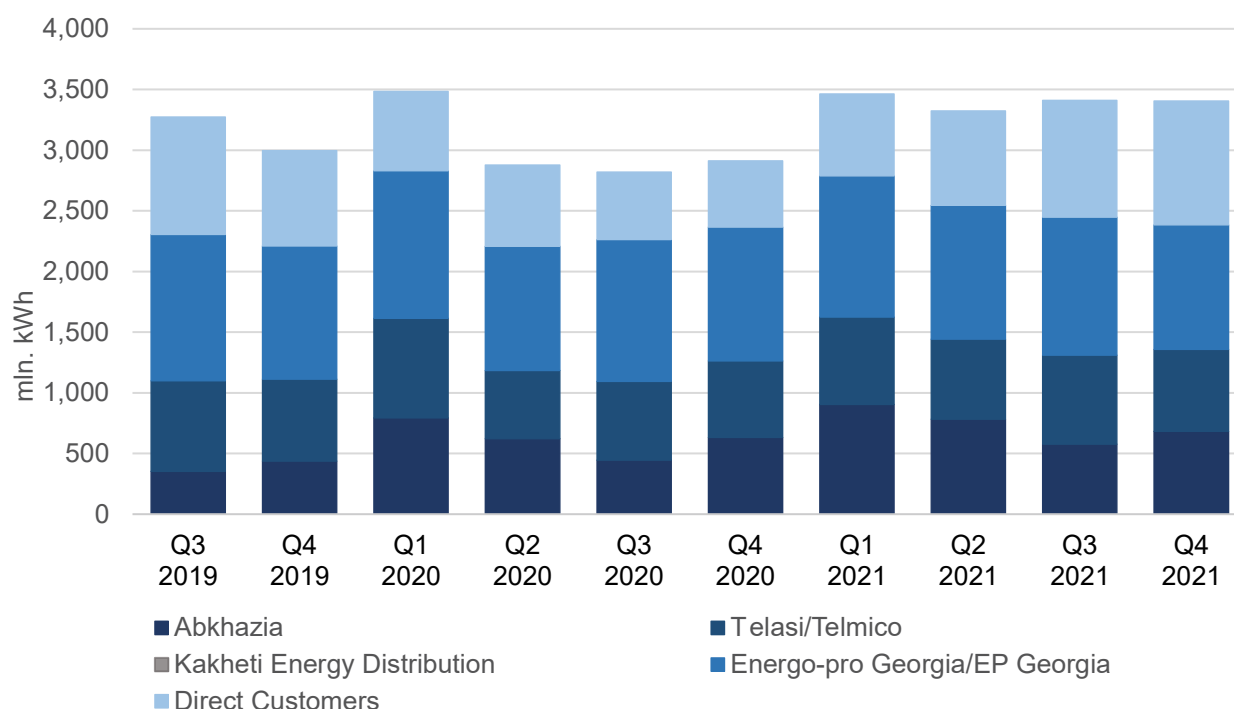
FIGURE 5 | WPP GENERATION AND SHARE IN TOTAL GENERATION



Source: ESCO

The total demand for electricity came from: Energo-Pro Georgia/EP Georgia (33.3% – 1,136 mln. kWh (Q3) and 30% – 1,024 mln. kWh (Q4)); Abkhazia (16.9% – 576 mln. kWh (Q3) and 20% – 683 mln. kWh (Q4)); Telasi/Telmico (21.5% – 735 mln. kWh (Q3) and 19.8% – 676 mln. kWh (Q4)); and direct customers (28.2% – 962 mln. kWh (Q3) and 30% – 1,023 mln. kWh (Q4)) (Figure 6). In the third quarter of 2021 demand from Abkhazia, Telasi/Telmico, and direct customers increased by 29.4%, 13.3%, and 73.4%, respectively, while it decreased from Energo-Pro Georgia/EP Georgia by 2.9%. In the fourth quarter, demand from Abkhazia, Telasi/Telmico, and direct customers increased by 7.9%, 7.4%, and 87.7%, respectively, although demand from Energo-Pro Georgia/EP Georgia decreased by 7.2%.¹

FIGURE 6 | ELECTRICITY CONSUMPTION BY TYPE OF CUSTOMER

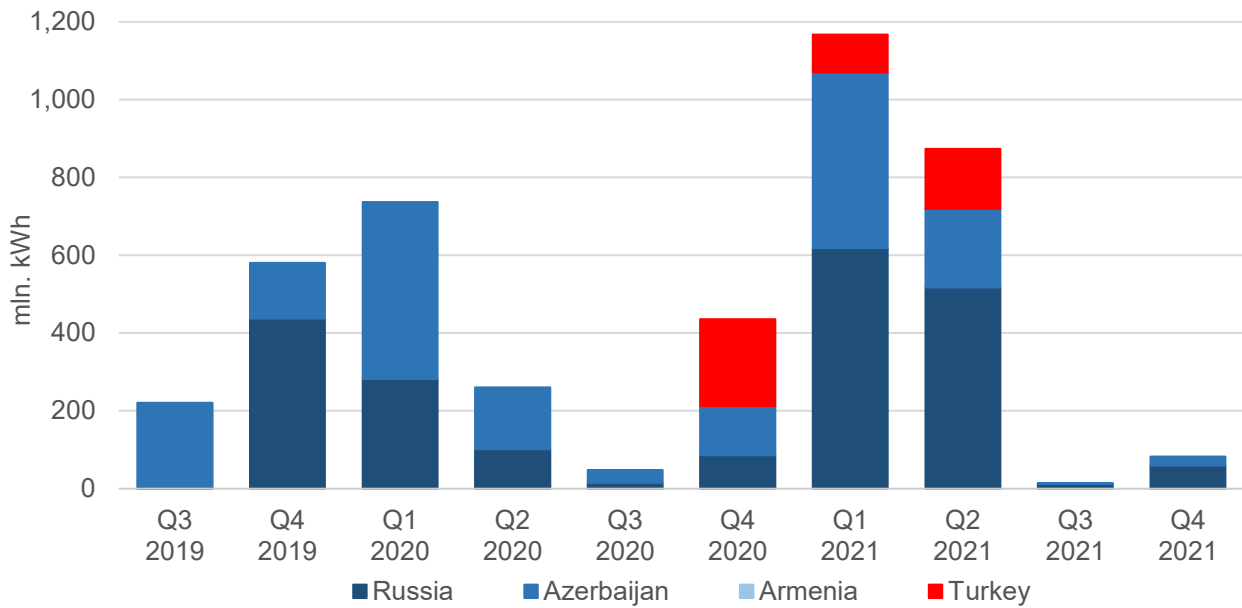


Source: ESCO

In the third and the fourth quarters of 2021, Georgia imported 14 mln and 83 mln. of electricity, respectively (compared to 48 mln and 436 mln. in 2020); 14.1% and 28.2% of which originated from Azerbaijan, 85.9% and 71.8% from Russia, and 0% and almost 0% from Armenia, respectively (Figure 7). During the same periods, Georgia exported 233 mln. and 14 mln. kWh (compared to 79 and 3 mln. kWh of export, respectively, in 2020); 62.5% and 0.05% of which were exported to Turkey, 0.7% and 0% to Azerbaijan, 36.8% and 99.9% went to Armenia, 0% and 0.05% went to Russia, respectively (Figure 8). In the third and fourth quarters of 2021, there were 283.2 mln. and 684.2 mln. kWh in electricity transit, out of which 53.3% and 51.6% went from Azerbaijan to Turkey, 25.2% and 36.6% from Russia to Turkey, 21.5% and 11.7% from Russia to Armenia, respectively.

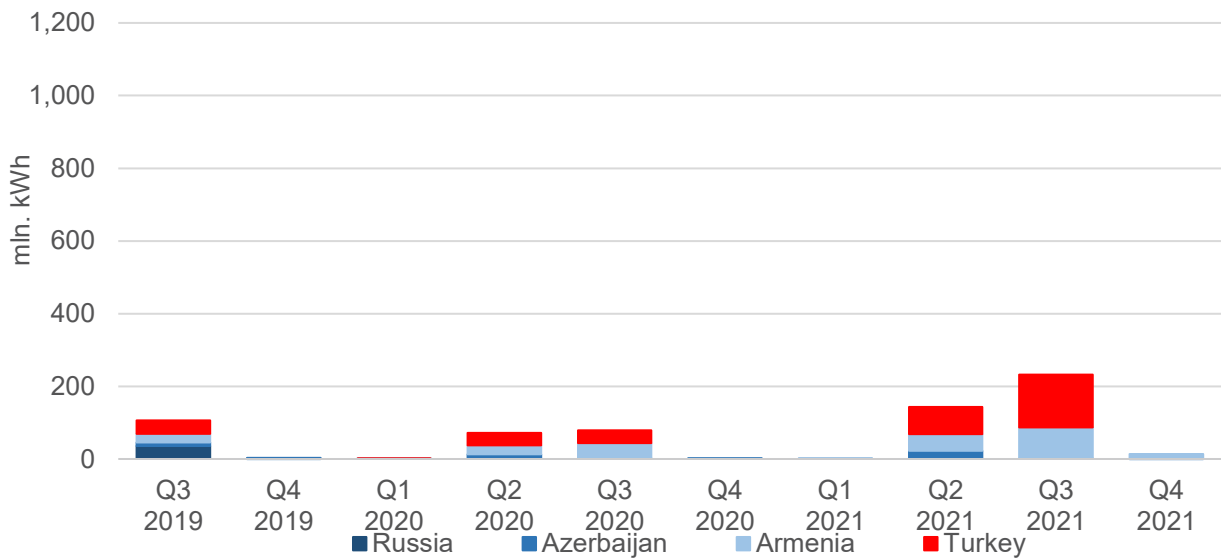
¹ Since 1st of July 2021, after adoption of a new electricity market model concept, operations of distribution and final supply have been distangled, thus three different groups of players appeared on the market, Distribution Licensees - responsible for distribution activities and covering losses in the distribution network - Universal Service Suppliers - responsible for providing electricity to residential sector and small enterprises and Public Service Organizations – responsible for providing electricity to medium and large enterprises upon the written agreement. Currently, Energo-pro Georgia and Telasi continue their distribution activities, while EP Georgia Supply and Tbilisi Electricity Supply Company have been separated from them and play the role of both Universal Service Suppliers and Public Service Organizations.

FIGURE 7 | ELECTRICITY IMPORTS



Source: ESCO

FIGURE 8 | ELECTRICITY EXPORTS

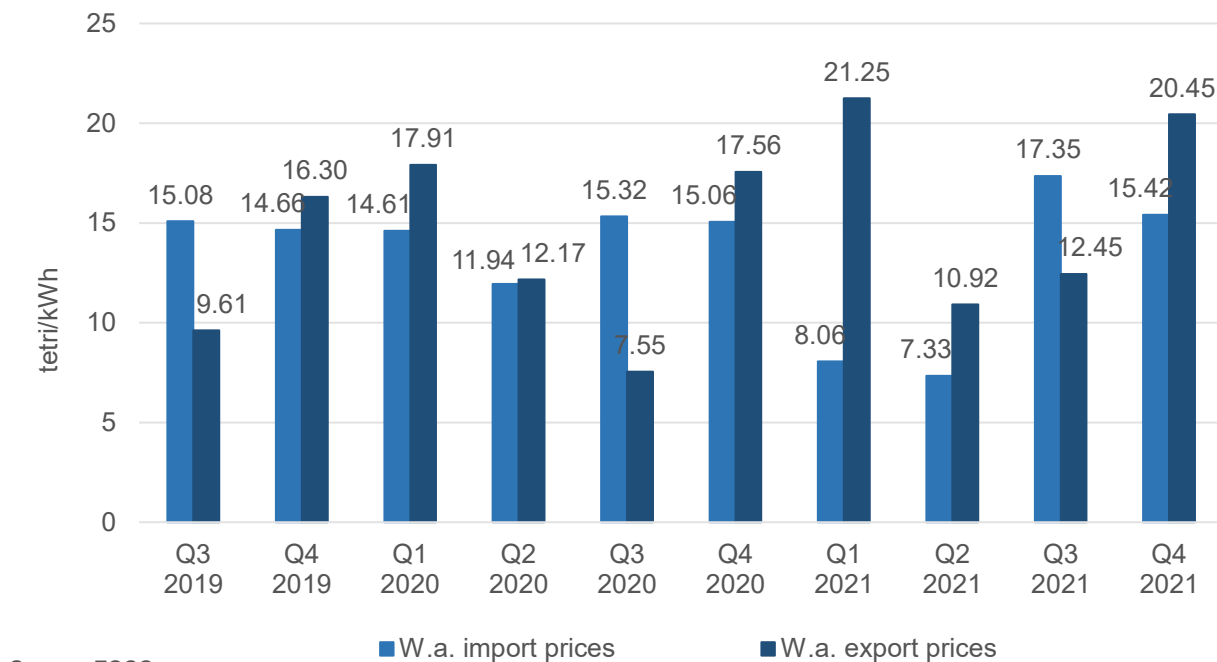


Source: ESCO

The weighted average electricity import price in the third and fourth quarters of 2021, on an annual basis, increased by 11% and 6.1% in USD, respectively, while in GEL, the prices in both quarters increased by 13.3% and 2.4%, (from 4.99 ¢ or 15.32 tetri per kWh (Q3) and 4.63 ¢ or 15.06 tetri per kWh (Q4) in 2020, to 5.53 ¢ or 17.35 tetri per kWh and 4.91 ¢ or 15.42 tetri per kWh in 2021). The annual weighted average electricity export price in the third quarter of 2021 increased by 59.3% in

USD and by 64.8% in GEL (from 2.48 ¢ or 7.55 tetri per kWh in the third quarter of 2020 to 3.94 ¢ or 12.45 tetri per kWh by 2021) (Figure 10). While the export price in the fourth quarter of 2021 increased by 18.5% in USD and by 16.5% in GEL (from 5.5 ¢ or 17.56 tetri per kWh in the fourth quarter of 2020 to 6.52 ¢ or 20.45 tetri per kWh by 2021).

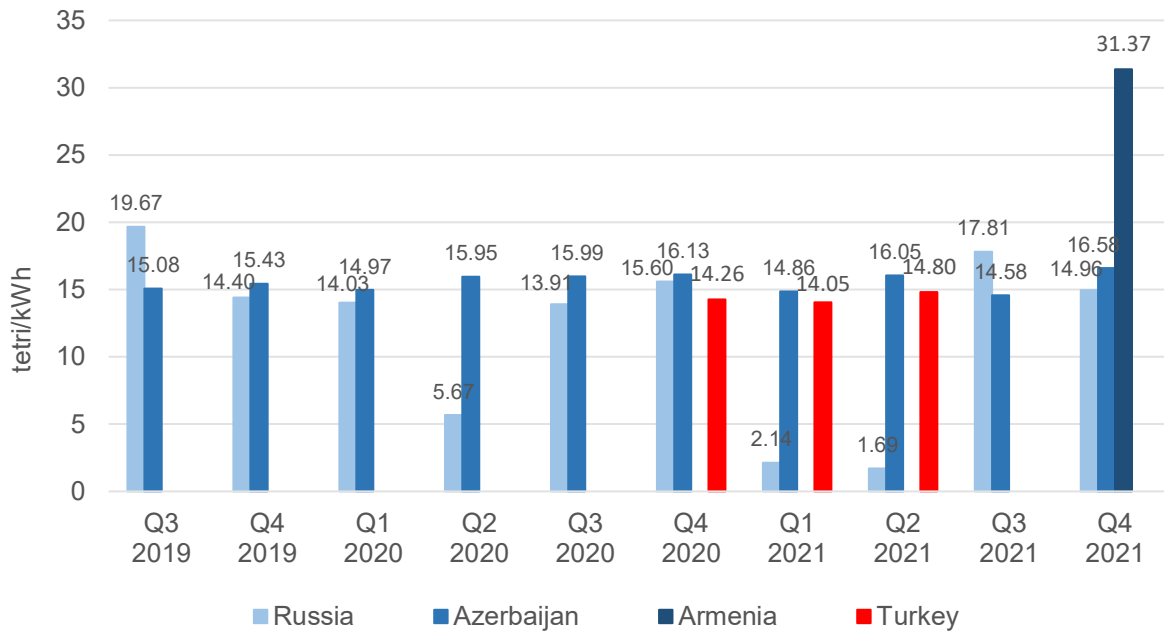
FIGURE 9 | ELECTRICITY IMPORT AND EXPORT PRICES



Source: ESCO

Import prices from Russia in the third quarter of the year stood at 5.69 ¢ or 17.81 tetri per kWh, while they were 4.61 ¢ or 14.58 tetri per kWh for imports from Azerbaijan. In the fourth quarter, the Russian price amounted to 4.77 ¢ or 14.96 tetri per kWh, while the Azerbaijan price - to 5.29 ¢ or 16.58 tetri per kWh, and the Armenian price - to 10 ¢ or 31.37 tetri per kWh (Figure 10).

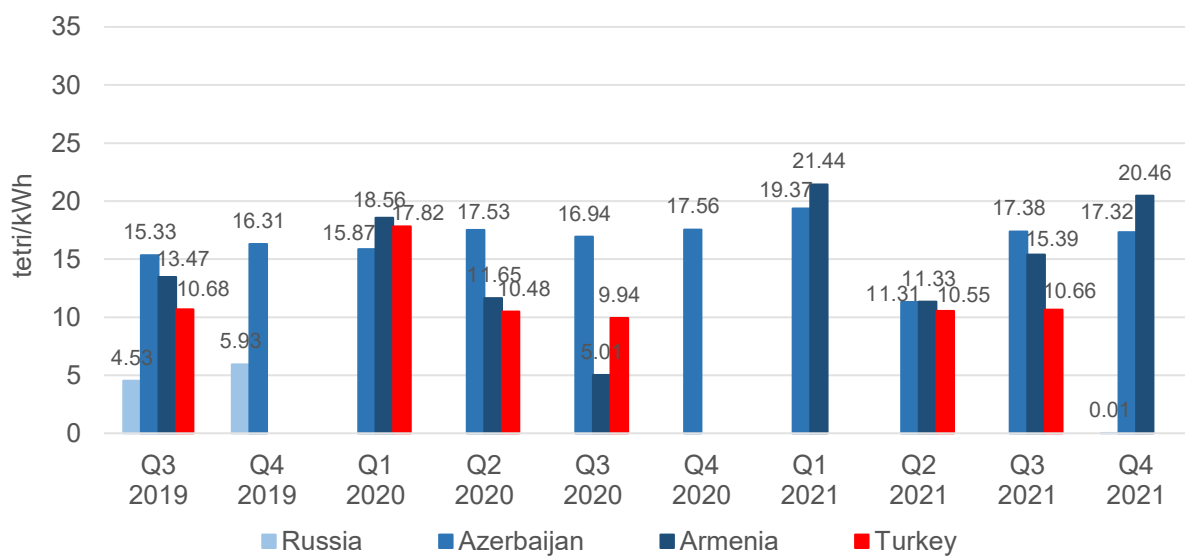
FIGURE 10 | ELECTRICITY IMPORT PRICES BY COUNTRY



Source: ESCO

In the third quarter, export prices to Azerbaijan, Turkey, and Armenia stood at 5.5 ¢ or 17.38 tetri, 3.37 ¢ or 10.66 tetri, and 4.88 ¢ or 15.39 tetri per kWh, respectively. Whereas, in the fourth quarter, the price of exports to Azerbaijan, Russia, and Armenia amounted to 5.56 ¢ or 17.32 tetri, 0.004 ¢ or 0.013 tetri, 6.52 ¢ or 20.46 tetri, respectively (Figure 11).

FIGURE 11 | EXPORT PRICES BY COUNTRY

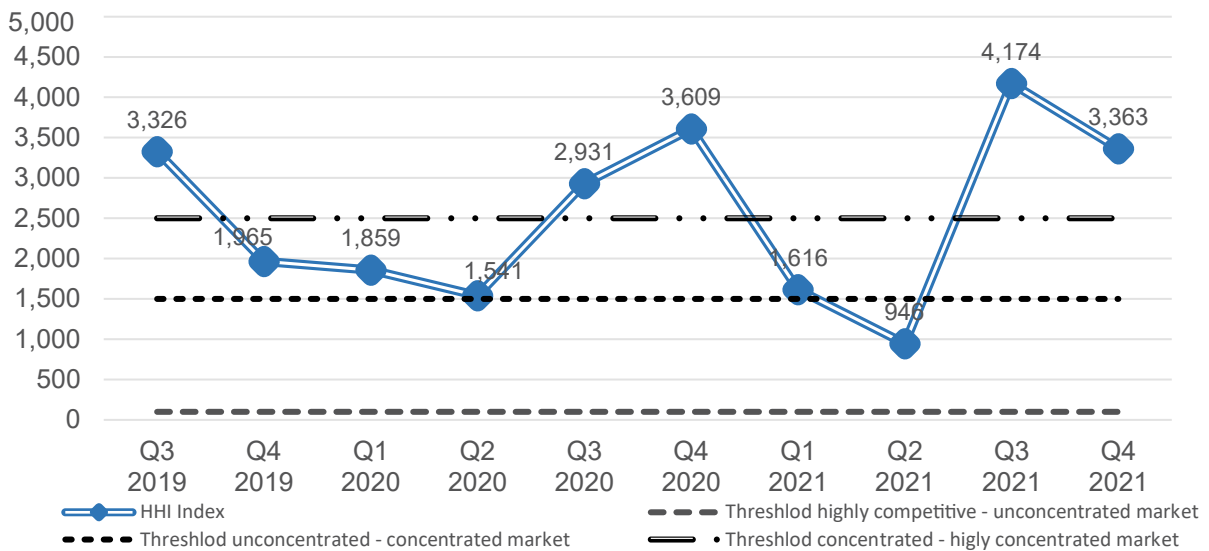


Source: ESCO

ELECTRICITY MARKET CONCENTRATION

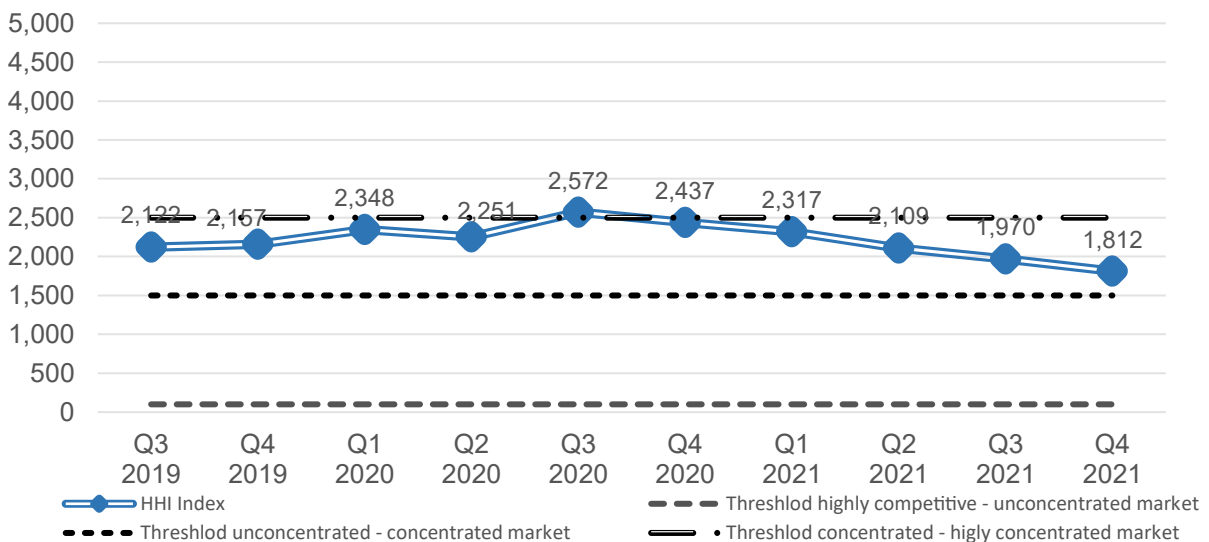
The Hirschman-Herfindahl Index (HHI) of market concentration is utilized to evaluate how competitive the generation and consumption segments of the market have been over the year. In the third and fourth quarters of 2021, the Georgian electricity generation market was highly concentrated, with HHI values of 4,174 and 3,363, respectively (Figure 12). The level of the third quarter was higher than in 2020, with a HHI value of 2,931, while the level of the fourth quarter was lower than in 2020, with a HHI value of 3,609. In the consumer segment for the same period, the consumption indexes dropped below the thresholds for a highly concentrated (from the 2020 levels – 2,572 and 2,437) in the third quarter of the year, to a HHI value of 1,970, and in the fourth quarter of the year to a HHI value of 1,812 (Figure 13).

FIGURE 12 | HIRSCHMAN-HERFINDAHL INDEX FOR POWER GENERATION



Source: ESCO

FIGURE 13 | HIRSCHMAN-HERFINDAHL INDEX FOR POWER CONSUMPTION

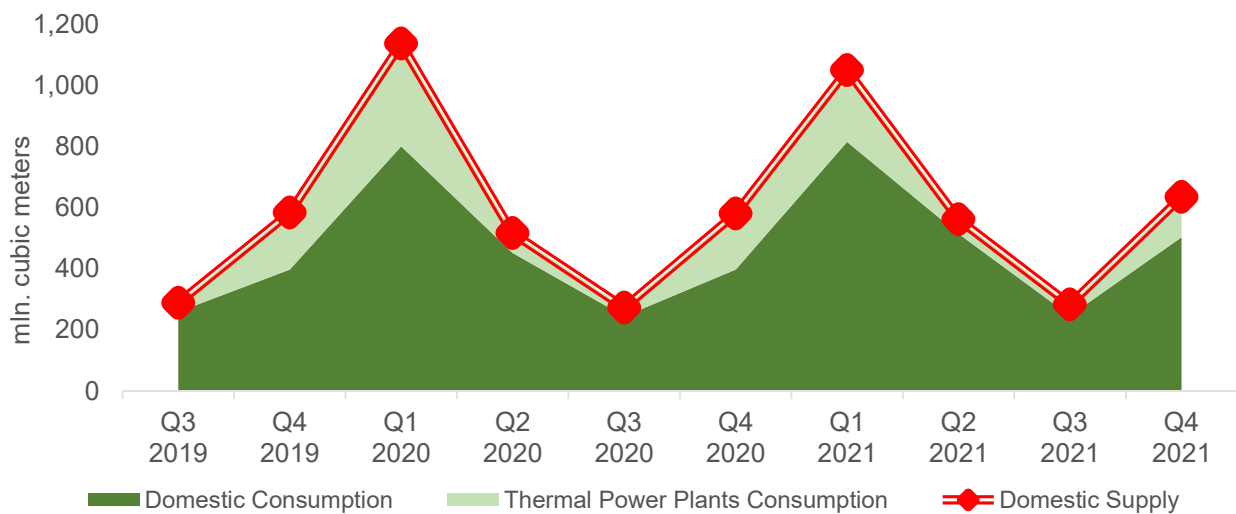


Source: ESCO

NATURAL GAS SUPPLY: CONSUMPTION – TRADE

In the third and the fourth quarters of 2021, the total supply of natural gas was, respectively, 284 and 637 mln. cubic meters (a 3.7% and 9.6% increase, from 273 million and 581 million cubic meters in the corresponding periods of 2020), of which 37 mln. and 133 mln. cubic meters (13.1% and 20.8% of total supply) were consumed by thermal power plants (a 30.6% increase and 27.6% decrease – from 28 mln. and 183 mln. cubic meters in 2020 corresponding quarters). The remainder was supplied to the domestic market (Figure 14).

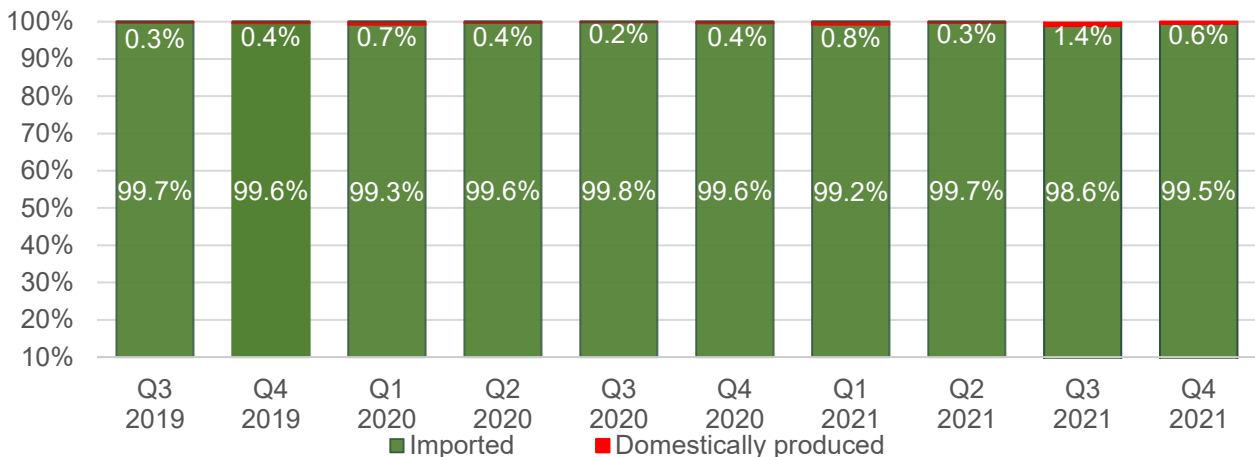
FIGURE 14 | TOTAL SUPPLY AND CONSUMPTION OF NATURAL GAS



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

Within these same periods of 2021, 98.6% (Q3) and 99.5% (Q4) of natural gas were imported, while the remaining amounts were produced domestically (Figure 15).

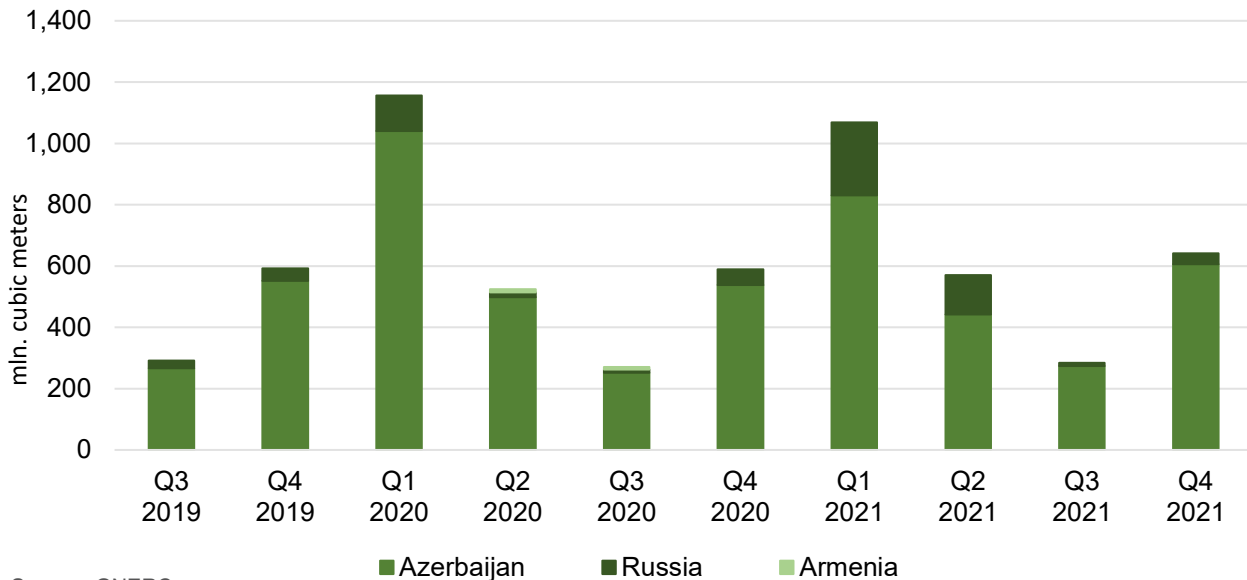
FIGURE 15 | SHARE OF DOMESTICALLY PRODUCED AND IMPORTED GAS



Source: GNERC

In the third and the fourth quarters of 2021, Georgia imported 280 and 633 mln. cubic meters of natural gas, respectively (a 3.1% and 9.3% increase, from 271 mln. and 579 mln. cubic meters since the corresponding periods of 2020). 96.5% (Q3) and 94.4% (Q4) of the imports came from Azerbaijan, while an additional 3.5% (Q3) and 5.6% (Q4) came from Russia (Figure 16).

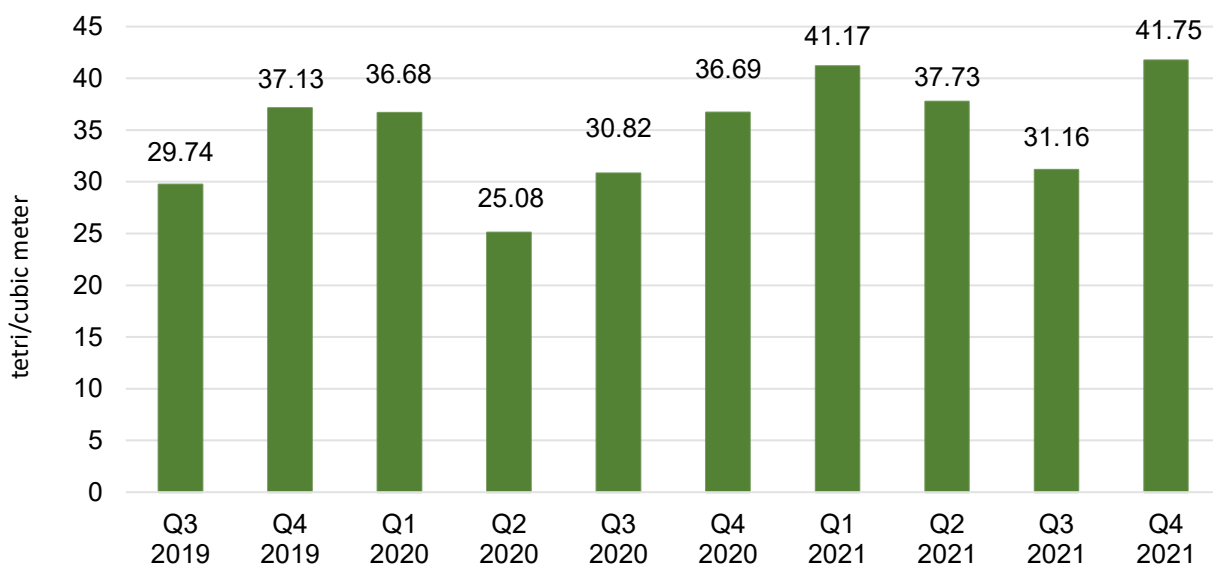
FIGURE 16 | NATURAL GAS IMPORTS BY COUNTRY



Source: GNERC

The weighted average natural gas import price in USD decreased by 1.3% in the third and increased by 17.7% in the fourth quarter of the year on an annual basis. The GEL price increased by 1.1% and 13.8% in the third and fourth quarters of the year (from 10.07 ¢ or 30.82 tetri per cubic meter (Q3) and 11.31 ¢ or 36.69 tetri per cubic meter (Q4) in 2020, to 9.94 ¢ or 31.16 tetri per cubic meter and 13.32 ¢ or 41.75 tetri per cubic meter in 2021) (Figure 17).

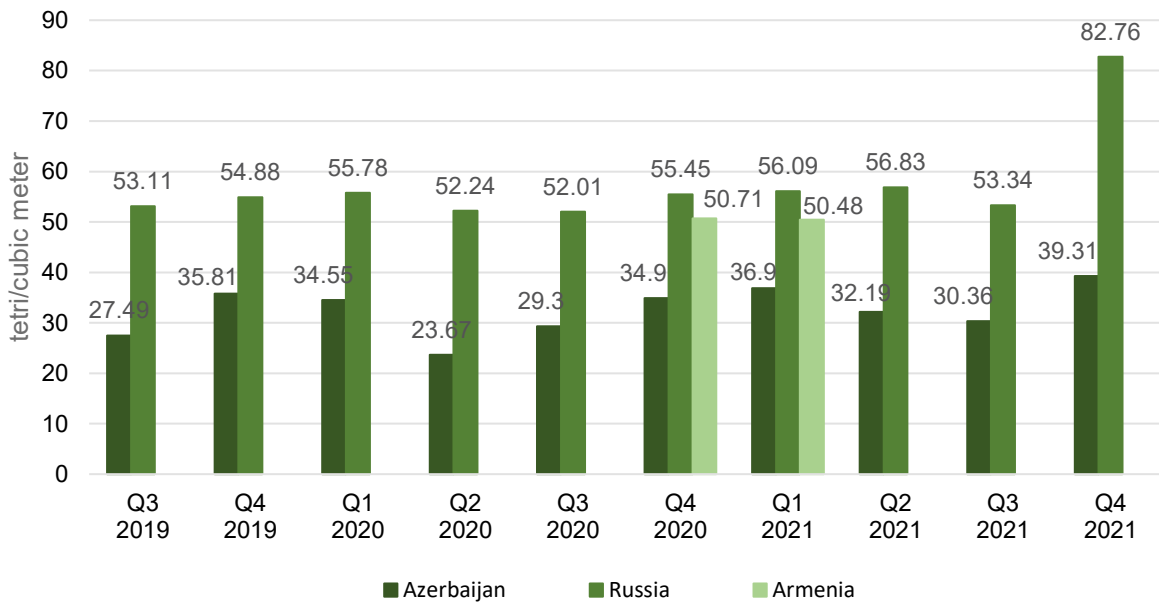
FIGURE 17 | NATURAL GAS IMPORT PRICES



Source: GNERC

In the third quarter of the year, import prices from Russia stood at 17 ¢ – 53.34 tetri – per cubic meter, against 9.69 ¢ – 30.36 tetri – per cubic meter for the gas imported from Azerbaijan. In the fourth quarter, the Russian price amounted to 26.39 ¢ – 82.76 tetri – per cubic meter, while the Azerbaijani price amounted to 12.54 ¢ – 39.31 tetri – per cubic meter (Figure 18).

FIGURE 18 | NATURAL GAS IMPORTS

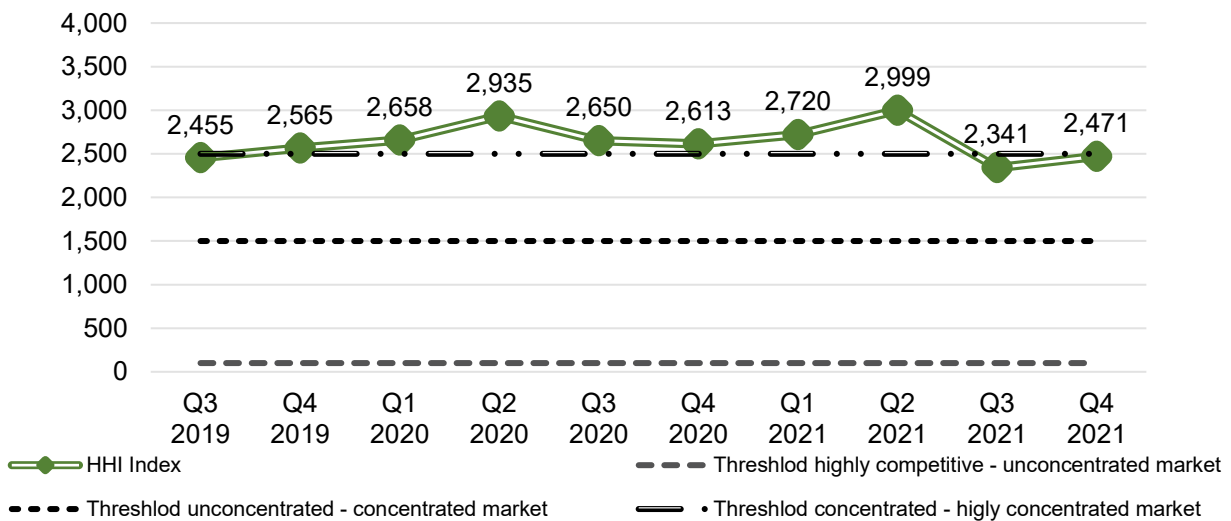


Source: GNERC

NATURAL GAS MARKET CONCENTRATION

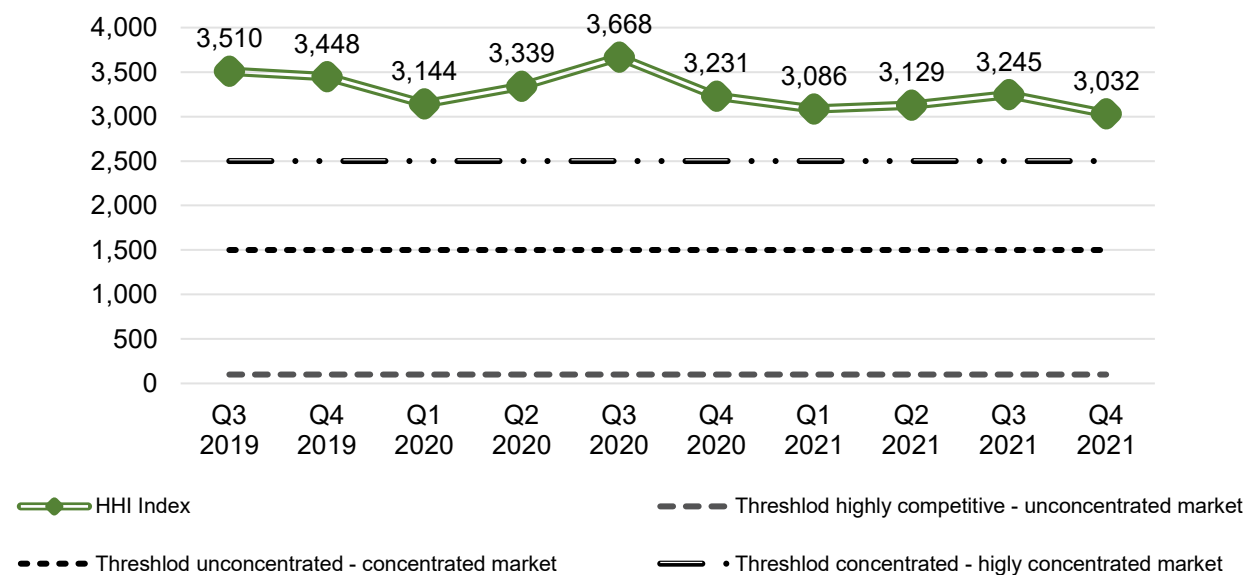
The Hirschman-Herfindahl Index (HHI) of market concentration is utilized to evaluate how competitive the retail and wholesale markets of natural gas have been over the year. In the third and fourth quarters of 2021, the retail market dropped below the highly concentrated market threshold, with HHI values of 2,341 and 2,471, respectively (Figure 19). Q3 and Q4 values were lower than that for the third and fourth quarters of 2020, with HHI values of 2,650 and 2,613. 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 3,245 and 3,032, although the index seems to be on a slightly declining trend (the values for the third and fourth quarters are below the corresponding 2020 levels of 3,668 and 3,231) (Figure 20).

FIGURE 19 | HIRSCHMAN-HERFINDAHL INDEX FOR THE RETAIL MARKETS



Source: GNERC

FIGURE 20 | HIRSCHMAN-HERFINDAHL INDEX FOR THE WHOLESALE MARKETS

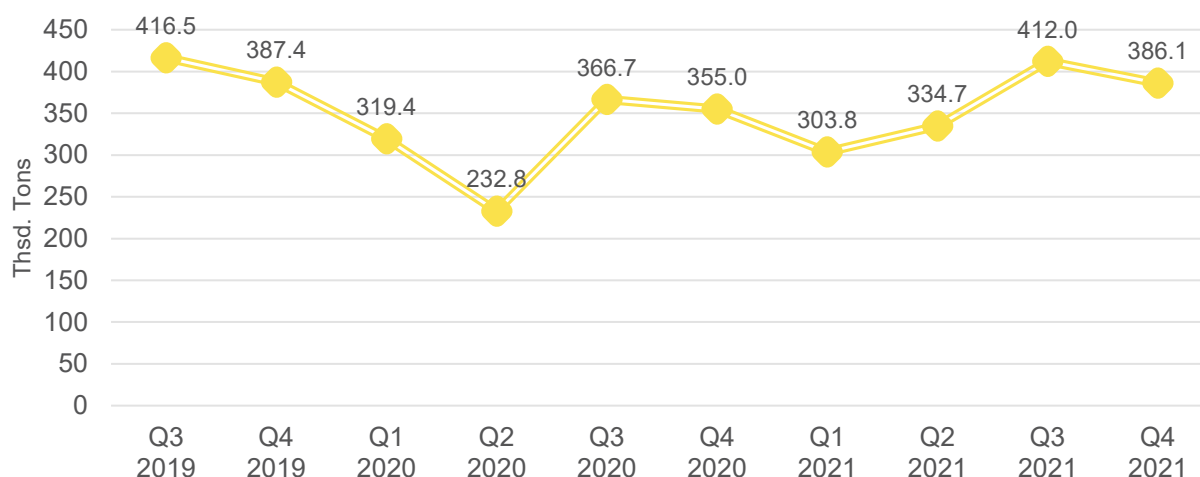


Source: GNERC

OIL PRODUCT SUPPLY: CONSUMPTION – TRADE

In the third and fourth quarters of 2021, the total supply of oil products was 412 and 386.1 thsd. tons, respectively (+12.4% and +8.8% compared to 2020) (Figure 21).

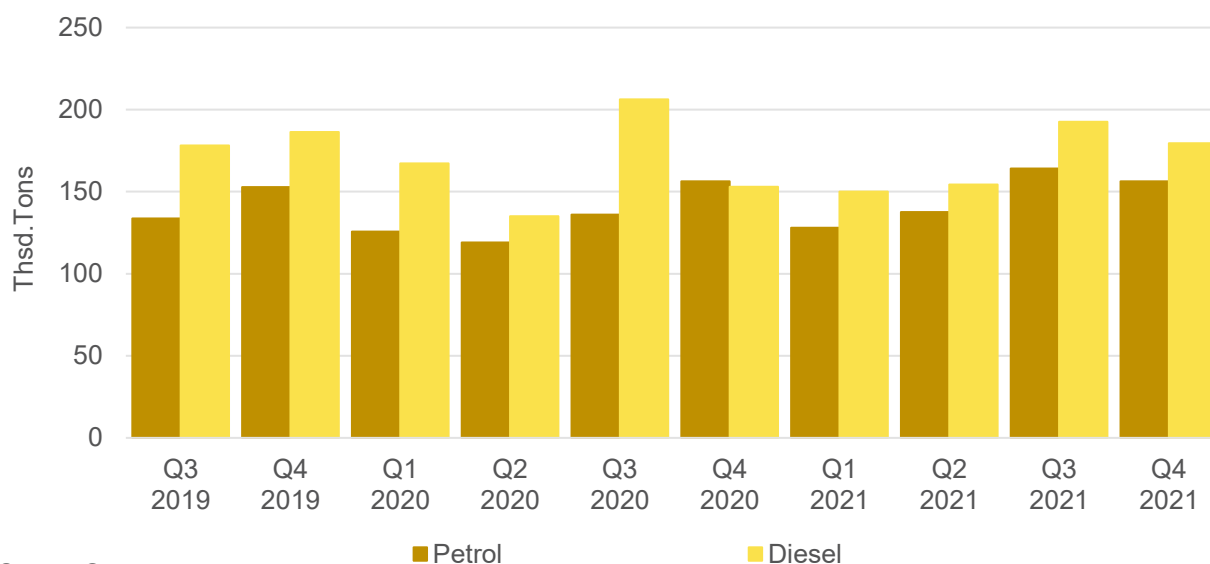
FIGURE 21 | TOTAL SUPPLY OF OIL PRODUCTS



Source: Geostat

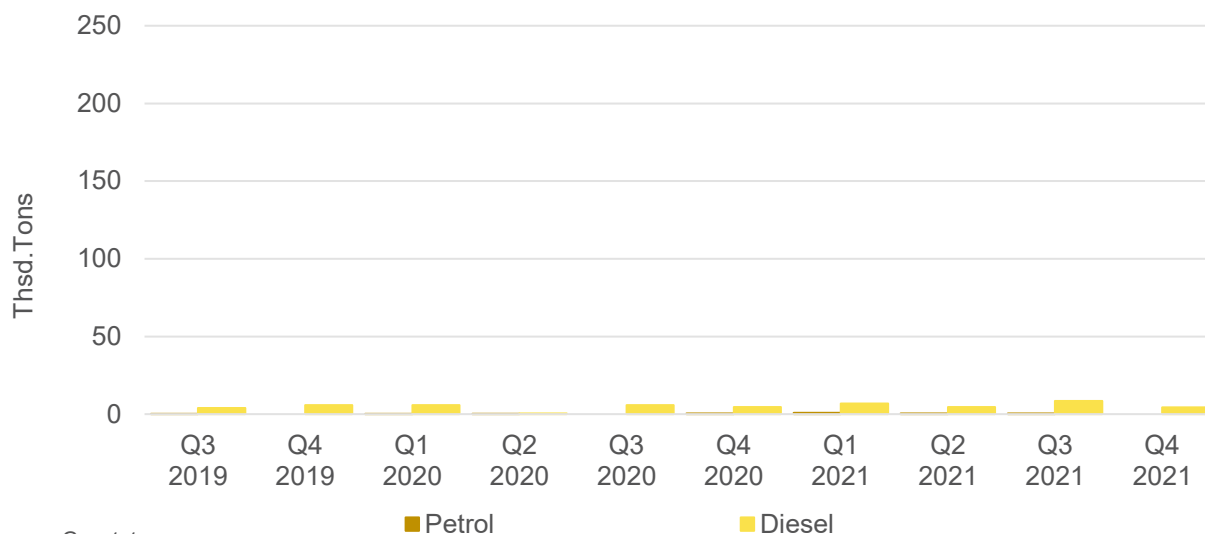
In the last two quarters of 2021, 164.2 and 156.26 thsd. tons of petrol (+20.7% and -0.1% compared to the corresponding period in 2020), and 192.53 and 179.43 thsd. tons of diesel were imported (-6.6% and +17.4% compared to 2020), respectively (Figure 22). In the same period, petrol exports amounted to 0.447 and 0 thsd. tons (compared to 0 and 0.503 thsd. tons of exports, respectively, in 2020), while diesel exports were 8.42 and 4.41 thsd. tons (+44.2% and -5.6% compared to 2020) (Figure 23).

FIGURE 22 | IMPORT OF PETROLEUM AND DIESEL



Source: Geostat

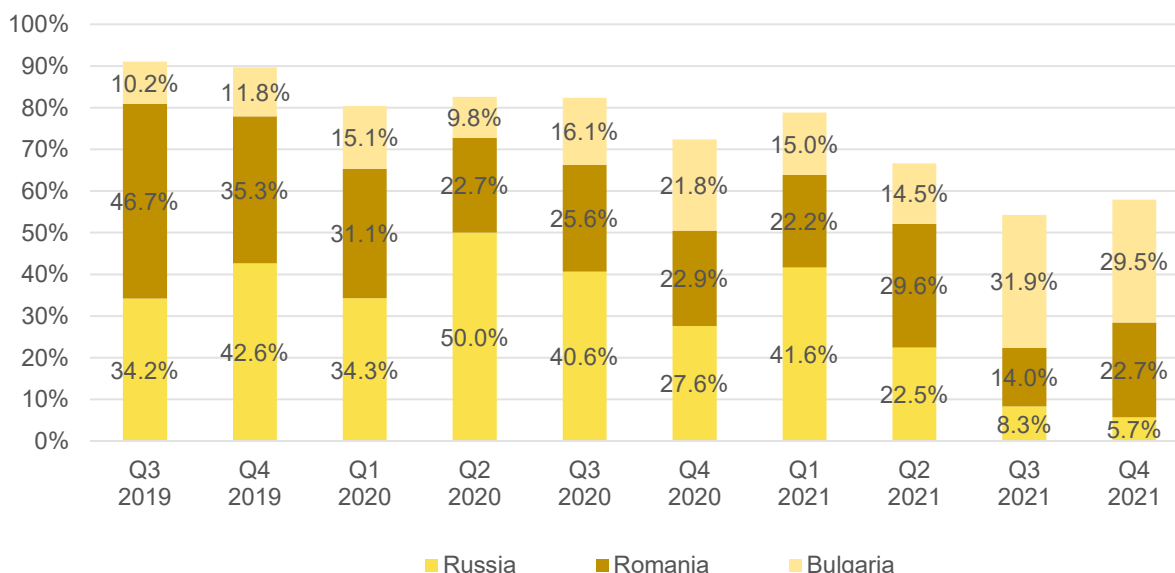
FIGURE 23 | EXPORT OF PETROLEUM AND DIESEL



Source: Geostat

In the third quarter of 2021, Georgian petroleum imports came from twenty-five countries. However, 54.3% of total imports were provided by three major import countries: Bulgaria (31.9%), Romania (14%), and Russia (8.3%). In the fourth quarter of the year, Georgia imported from twenty-one countries. However, 58% came from Bulgaria (29.5%), Romania (22.7%), and Russia (5.7%) (Figure 24).

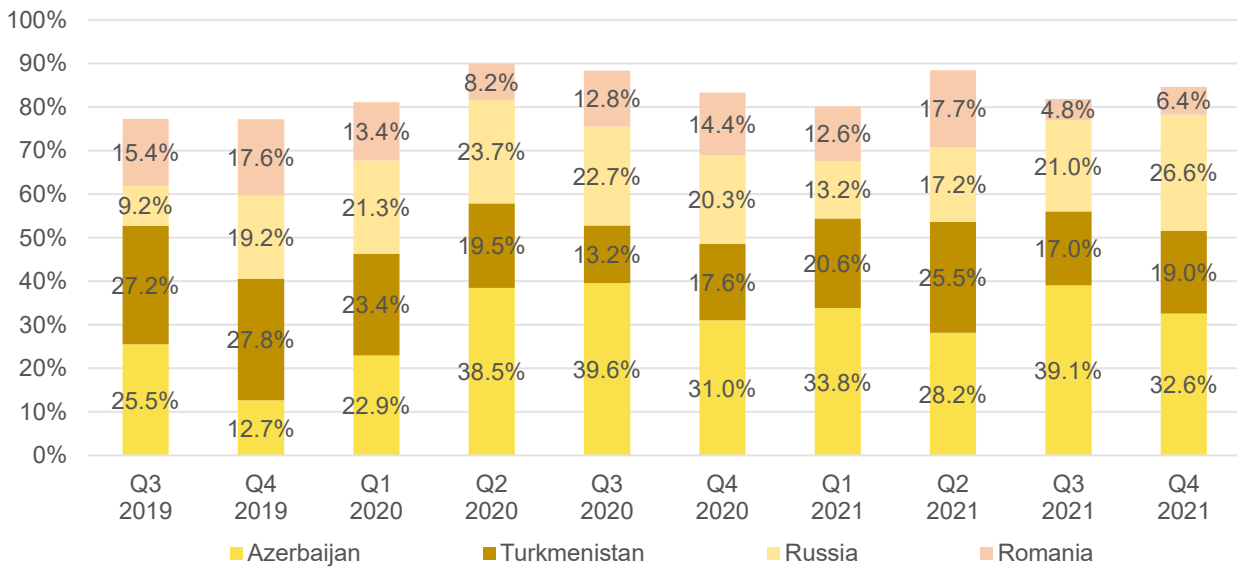
FIGURE 24 | SHARE OF COUNTRIES IN TOTAL PETROLEUM IMPORTS



Source: Geostat

In the third quarter of 2021, Georgian diesel imports came from forty-two countries. However, 81.8% of total imports were provided by four major import countries: Azerbaijan (39.1%), Russia (21%), Turkmenistan (17%), and Romania (4.8%). In the fourth quarter of the year, Georgia imported from thirty-nine countries. However, 84.7% came from Azerbaijan (32.6%), Russia (26.6%), Turkmenistan (19%), and Romania (6.4%). (Figure 25).

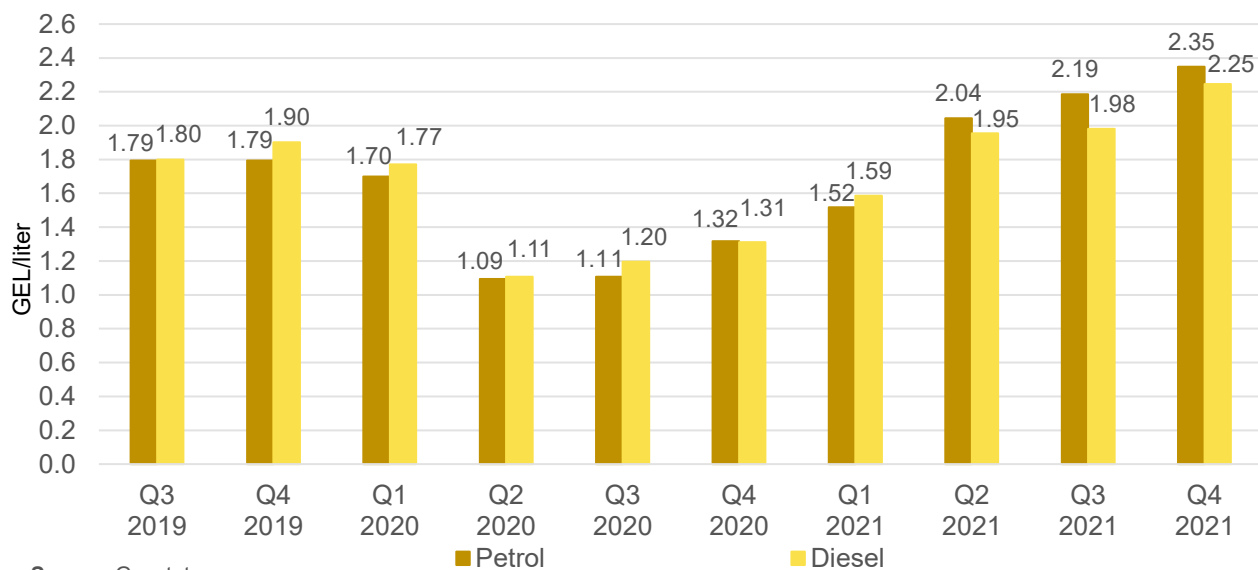
FIGURE 25 | SHARE OF COUNTRIES IN TOTAL DIESEL IMPORTS



Source: Geostat

The weighted average petroleum import prices in USD increased by 92.9% and 83.8% in the third and fourth quarters of 2021, on an annual basis, while the prices in GEL increased by 97.4% and 78.3%, respectively (from 36 ¢ – 1.11 GEL – and 41 ¢ – 1.32 GEL – per liter in the third and fourth quarters of 2020, respectively, to 70 ¢ – 2.19 GEL – and 75 ¢ – 2.35 GEL – per liter in 2021). The weighted average diesel import prices in USD increased by 61.7% and 76.8% in the third and fourth quarters of 2021, on an annual basis, whereas the prices in GEL increased by 65.7% and 71.1% in the third and fourth quarters (from 39 ¢ – 1.20 GEL – and 41 ¢ – 1.31 GEL – per liter in the third and fourth quarters of 2020, respectively, to 63 ¢ – 1.98 GEL – and 72 ¢ – 2.25 GEL – per liter in 2021) (Figure 26).

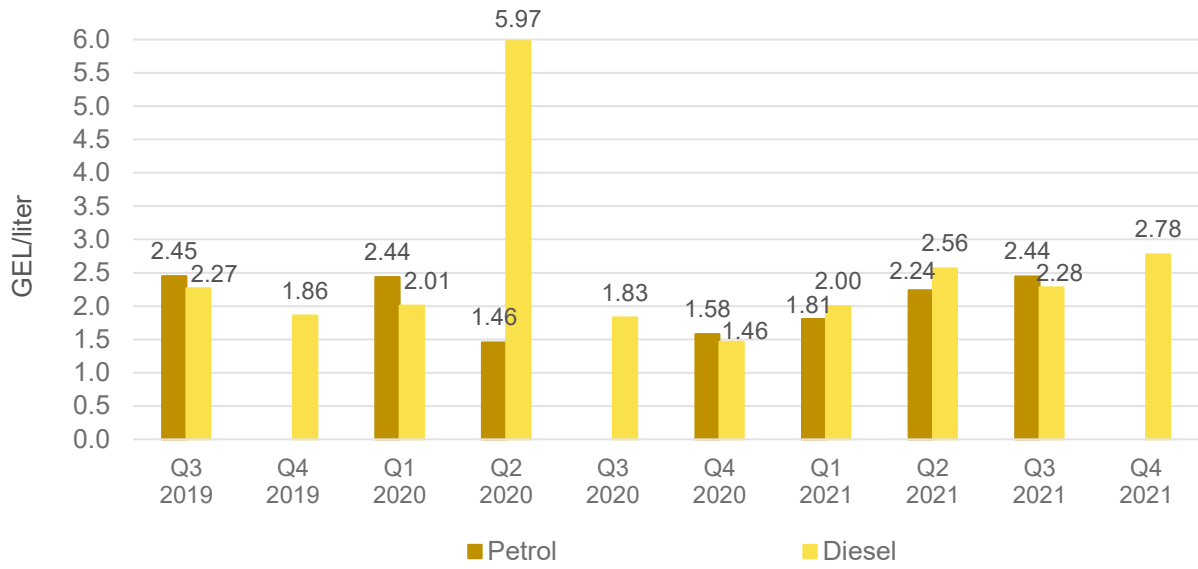
FIGURE 26 | WEIGHTED AVERAGE IMPORT PRICE OF PETROLEUM AND DIESEL



Source: Geostat

Considering petroleum export prices, the weighted average price was 78 ¢ – 2.44 GEL in the third quarter of 2021 (as mentioned above, there were no petroleum exports in the fourth quarter). The weighted average diesel export price in USD increased by 22.5% and 94.4% in the third and fourth quarter of 2021, on an annual basis, while the prices in GEL increased by 24.9% and by 89.8%, respectively (from 60 ¢ – 1.83 GEL – and 46 ¢ – 1.46 GEL – per liter in the third and fourth quarters of 2020, to 73 ¢ – 2.28 GEL – and 89 ¢ – 2.78 GEL – per liter in 2021) (Figure 25).

FIGURE 27 | WEIGHTED AVERAGE EXPORT PRICE OF PETROLEUM AND DIESEL



Source: Geostat