

ISET

International School of Economics at TSU
Policy Institute



ENERGY MARKET REVIEW

BIANNUAL | QUARTER 3-4, 2020

ISET POLICY INSTITUTE

ENERGY AND ENVIRONMENT POLICY RESEARCH CENTER

Authors:

Norberto Pignatti
Policy Center Head

✉ n.pignatti@iset.ge

Mariam Tsulukidze
Researcher

✉ m.tsulukidze@iset.ge

Mariam Lobjanidze
Researcher

✉ m.lobjanidze@iset.ge

ELECTRICITY MARKET REVIEW

- In the third quarter of 2020 power generation decreased compared to the same period in 2019, while it increased in the fourth quarter of the year.
- There was a decrease in electricity consumption in the third and the fourth quarter of 2020 on annual basis, clearly caused by the COVID-19 lockdown.
- Interestingly, electricity consumption in Abkhazia increased substantially in the third and the fourth quarters of the year, compared to the same period in 2019, while in the rest of the country consumption mostly decreased.
- In the third and the fourth quarters of the year, the electricity imports and exports decreased compared to the previous year, again most likely due to COVID-19 lockdowns.
- In the third and the fourth quarters of 2020, the concentration in the Demand of the electricity market increased compared to the corresponding period of the last year, while on the Supply-side it decreased in the third quarter and increased in the fourth quarter of the year.

NATURAL GAS SUPPLY

- There was a decrease in natural gas supply in the third and the fourth quarters of 2020, relative to 2019.
- Unsurprisingly, almost all the natural gas supplied to the market was imported from Azerbaijan, Russia, and Armenia, with Azerbaijan holding the highest share in the total supply.
- There was an increase in natural gas import prices in the third quarter, while there was a negligible decrease in the fourth quarter of the year.
- Both the retail and wholesale markets of the natural gas remained highly concentrated in both quarters, more concentrated than in the corresponding period of the previous year.

OIL PRODUCT SUPPLY

- In the third and the fourth quarters of 2020, the total supply of oil products decreased, apparently due to COVID-19 lockdowns.
- The volume of petroleum trade increased in the third and the fourth quarters of the year, while diesel imports increased in the third and decreased in the fourth 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 third and the fourth quarter of the year.
- The price of reexported diesel also decreased in the third and the fourth quarter of the year.

ABBREVIATION USED

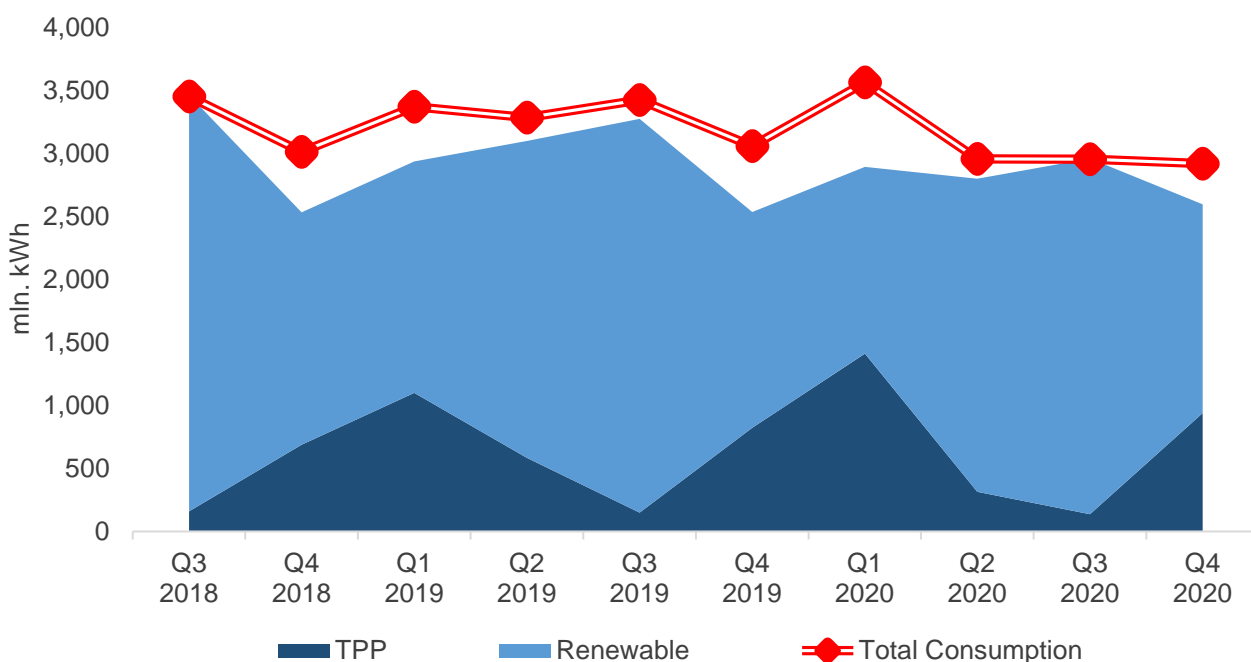
Mln – million
Thous - thousand
kWh – kilowatt-hour
HPP – Hydro Power Plant
WPP – Wind Power Plant
TPP – Thermal Power Plant
HHI - Hirschmann-Herfindahl Index

GENERATION – CONSUMPTION – TRADE

In the third and the fourth quarters of 2020, Georgian power plants generated 2,958 mln. and 2,594 mln. kWh of electricity, respectively (Figure 1). This represents a 9.6% decrease and 2.4% increase in total generation compared to the corresponding periods of the previous year (in 2019, the total generation in Q3 was 3,273 mln. kWh and 2,534 mln. kWh in Q4). On an annual basis, the reduction in generation in the third quarter of 2020 was derived from a 7.6%, 9.6%, and 5.4% decline in thermal, hydro, and wind power generation, respectively. The increase in production in the fourth quarter is related to the 14.1% and 0.07% increase in thermal and wind power generation, more than offsetting the 3.4% decrease in hydropower generation.

In the third and fourth quarters of 2020, electricity consumption on the local market amounted to 2,824 mln. (Q3) and 2,916 mln. kWh (Q4) (-13.8% and -2.8% compared to the third and fourth quarters of 2019, respectively) (Figure 1). Total power generation exceeded consumption by 134 mln. in the third quarter of the year and lagged by 322 mln. kWh in the fourth quarter. In percentage terms, in Q3 there was a generation surplus amounting to 4.5% of total generation, while in Q4 there was a generation deficit of 12.4% of total generation. In 2019 the difference between total generation and consumption resulted in a shortage in the third quarter of 6 mln. kWh, around 0.2% of the total generation, and in the fourth quarter shortage of 466 mln. kWh, around 18.4% 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 2020. Hydropower generation amounted to 2,799 mln. (94.6% of the total) and 1,632 mln. kWh (62.9% of the total), respectively (Figure 3), while thermal power (TPP) generation reached 137 mln. (4.6% of the total) and 939 mln. kWh (36.2% 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 22 mln. kWh (0.9% of the total) in the third and the fourth quarters of the year (Figure 5).

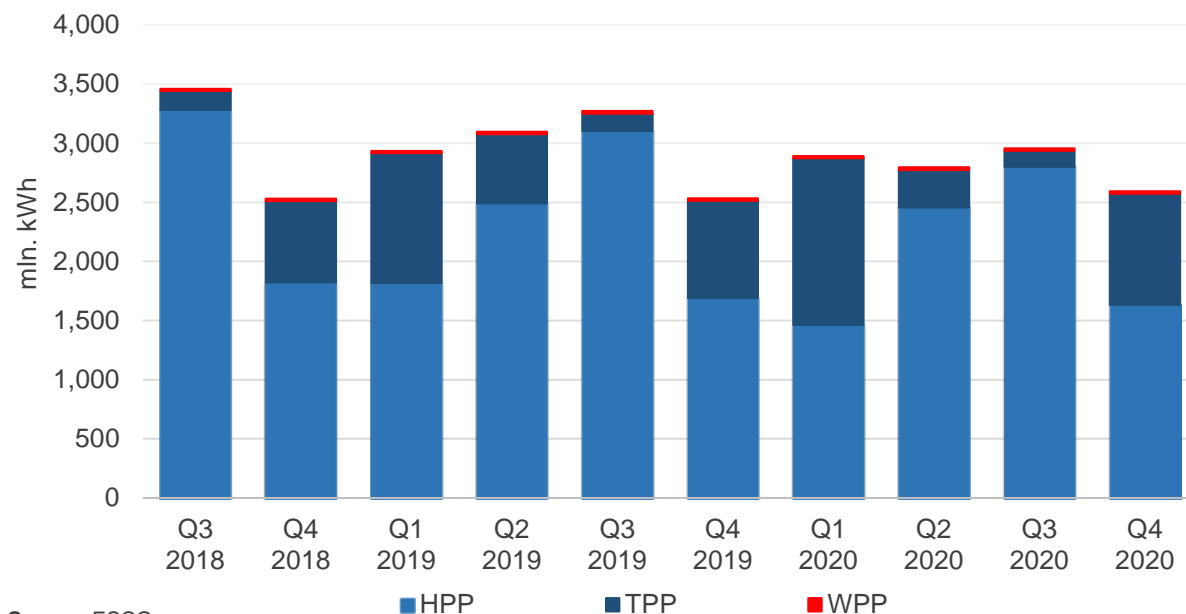
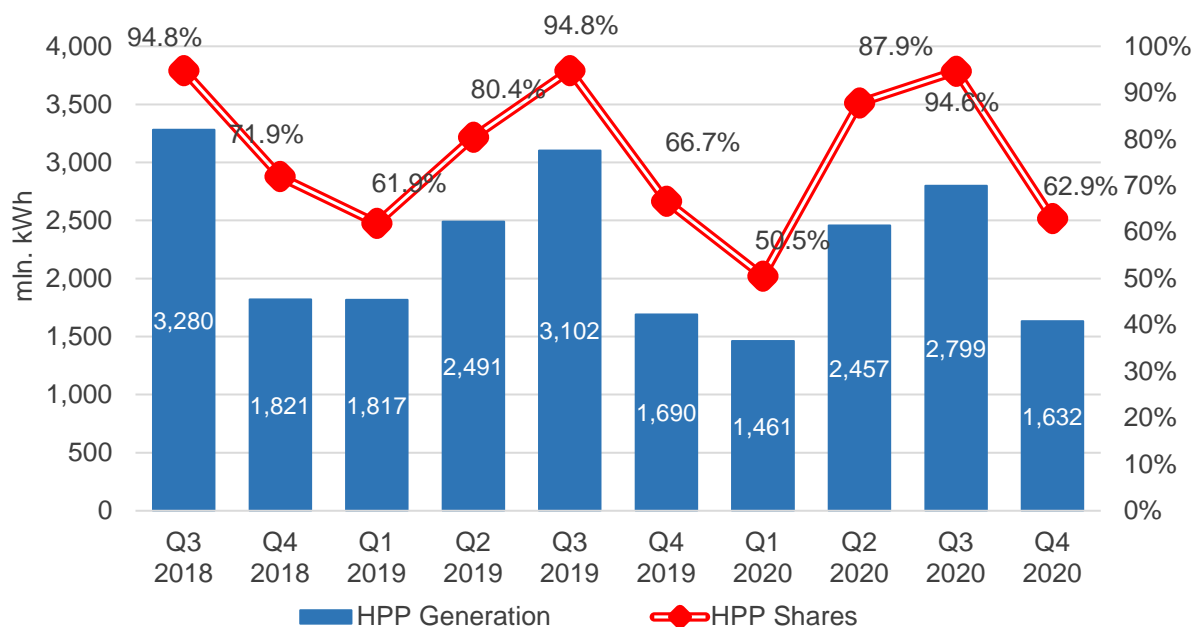
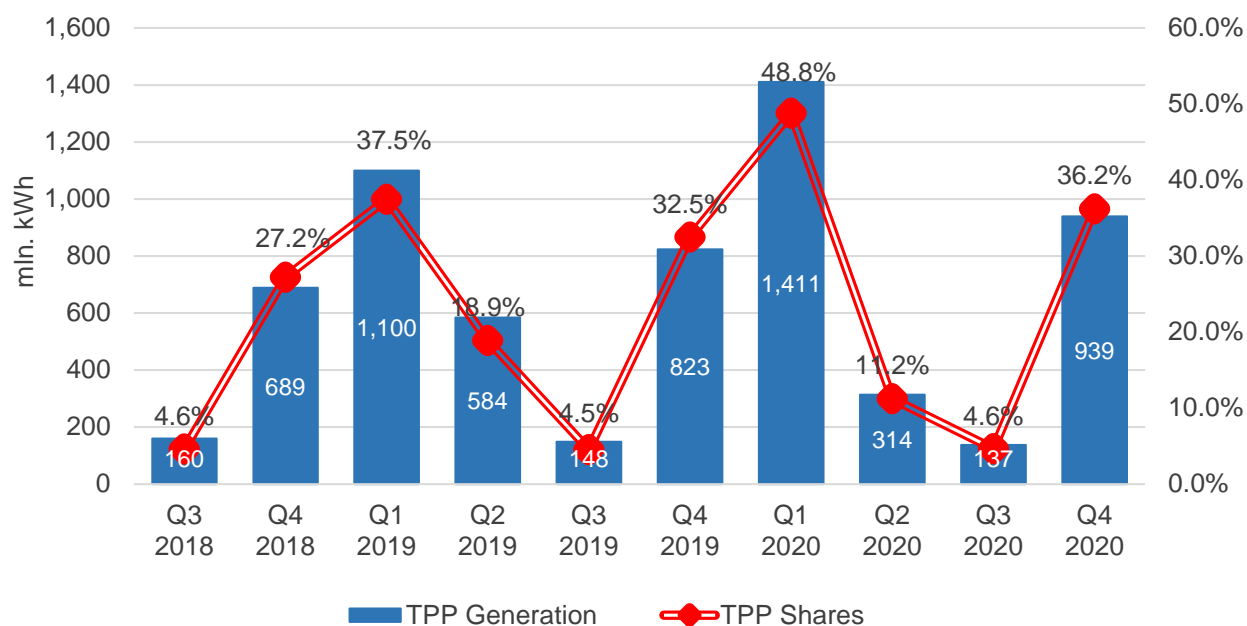
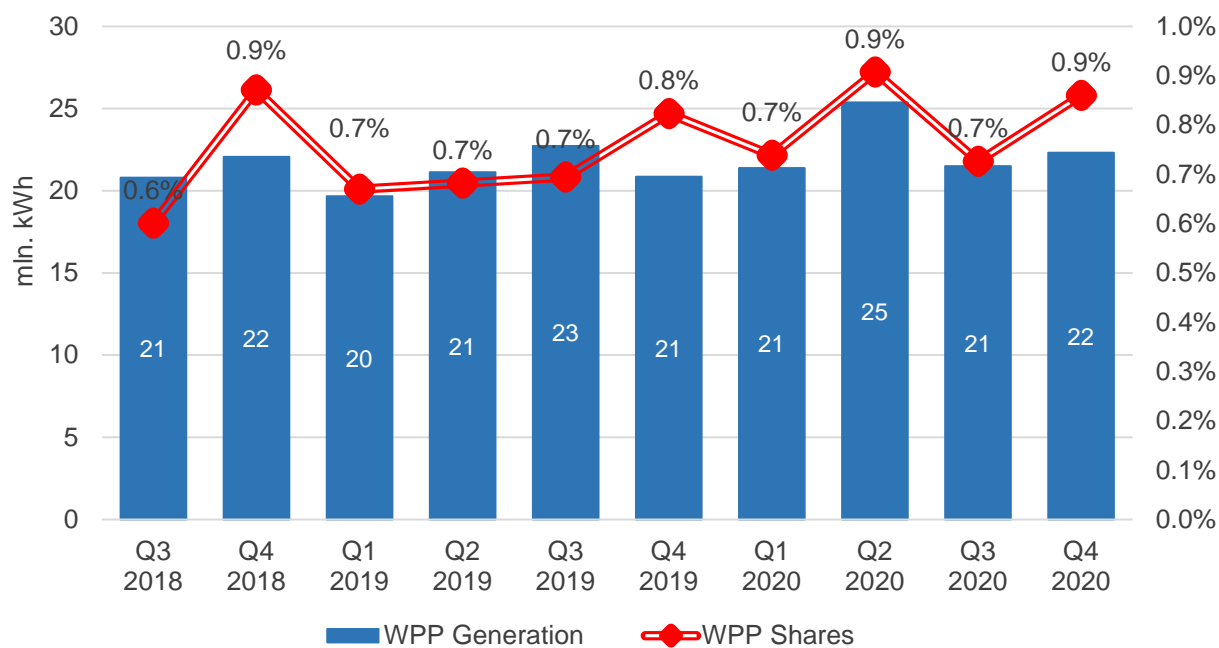
FIGURE 2 | ELECTRICITY GENERATION BY SOURCE**FIGURE 3 | HPP GENERATION AND SHARE IN TOTAL GENERATION**

FIGURE 4 | TPP GENERATION AND SHARE IN TOTAL GENERATION

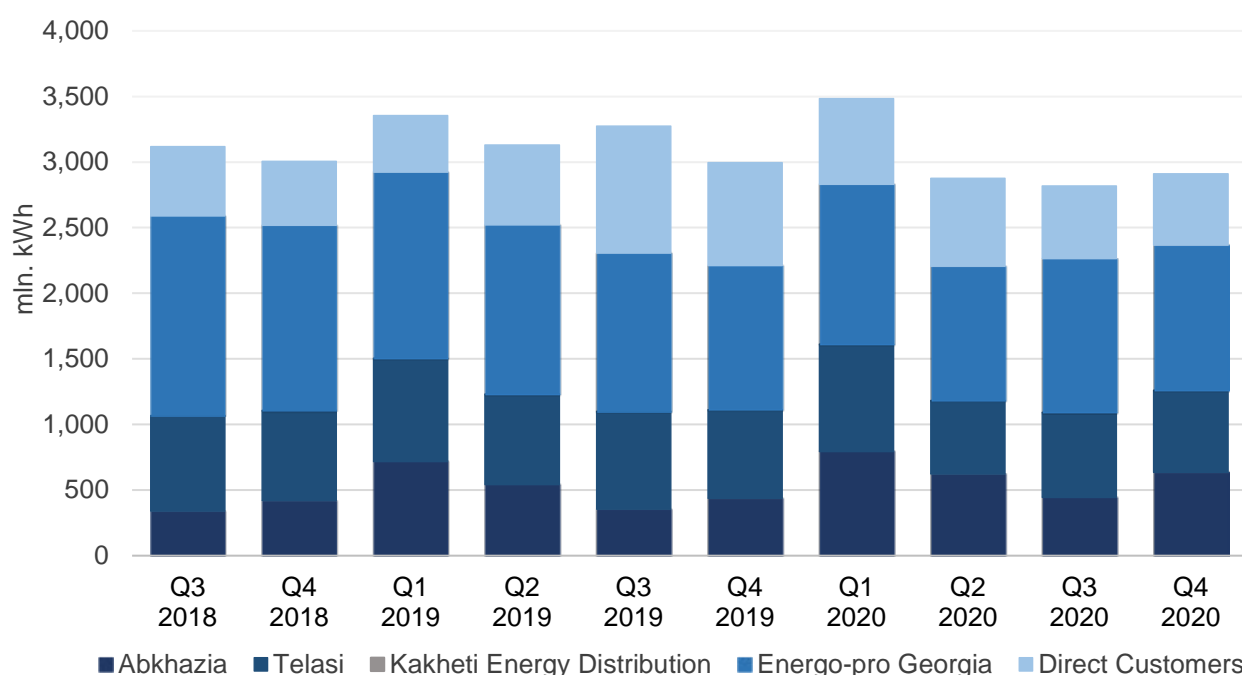
Source: ESCO

FIGURE 5 | WPP GENERATION AND SHARE IN TOTAL GENERATION

Source: ESCO

The total demand for electricity came from: Energo-Pro Georgia¹ (41.4% – 1,169 mln. kWh (Q3) and 37.9% – 1,104 mln. kWh (Q4)); Abkhazia (15.8% – 445 mln. kWh (Q3) and 21.7% – 633 mln. kWh (Q4)); Telasi (23% – 649 mln. kWh (Q3) and 21.6% – 629 mln. kWh (Q4)); and direct customers (19.7% – 555 mln. kWh (Q3) and 18.7% – 545 mln. kWh (Q4)) (Figure 6). In the third quarter of 2020 demand from Abkhazia increased by 26.1% compared to the previous year, while it decreased from Energo-Pro Georgia, Telasi, and direct customers by 3.1%, 13.1%, and 42.6%, respectively. In the fourth quarter, demand from Telasi and direct customers decreased by 6.9% and 30.7%, although demand from Energo-Pro Georgia and Abkhazia increased, by 0.6% and 44.7%, respectively.²

FIGURE 6 | ELECTRICITY CONSUMPTION BY TYPE OF CUSTOMER



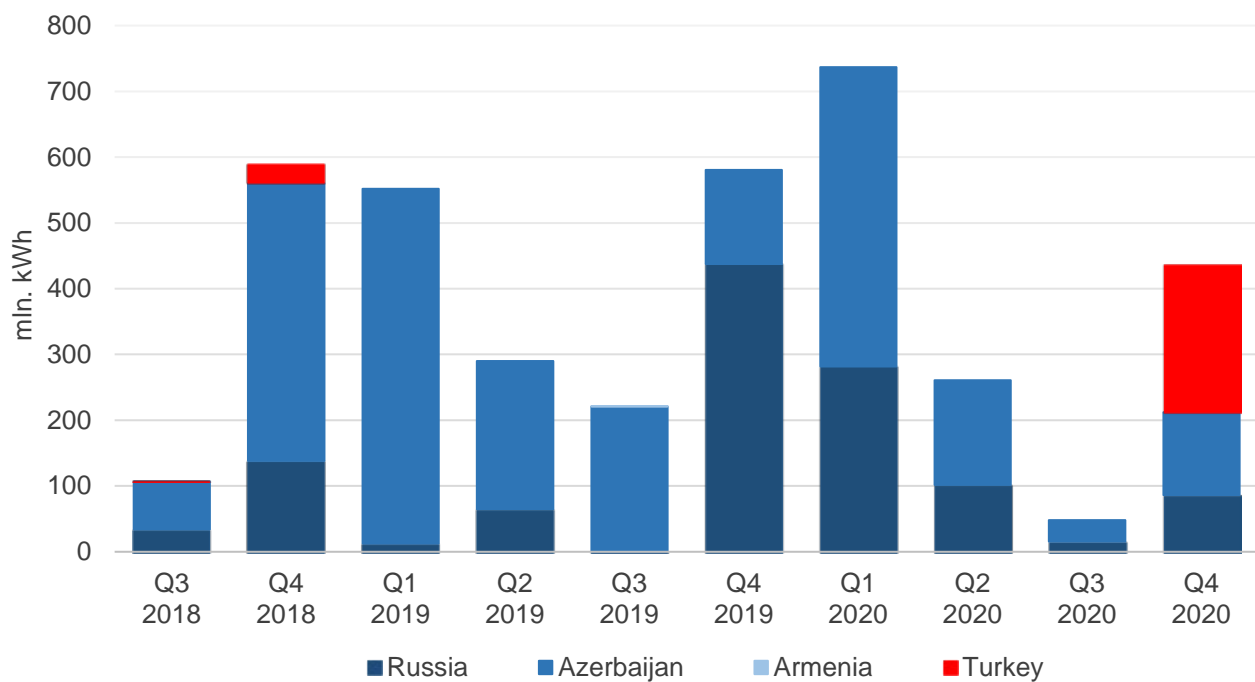
Source: ESCO

In the third and the fourth quarters of 2020, Georgia imported 48 mln. and 436 mln. kWh of electricity, respectively (compared to 221 mln. and 581 mln. kWh in 2019); 68% and 29% of which originated from Azerbaijan, 32% and 19.7% from Russia and 0% and 51.3% from Turkey, respectively (Figure 7). During the same period, Georgia exported 79 mln. and 3 mln. kWh (compared to 106 and 3 mln. kWh of export, respectively, in 2019); 45.1% and 0% of which were exported to Turkey, 2.7% and 3.2% to Azerbaijan, while the remaining 52.3% and 0% went to Armenia (Figure 8). In the third quarter of 2020, there were 51 mln. kWh in electricity transit from Azerbaijan to Turkey, although there was no transit in the fourth quarter.

¹ Energo-Pro Georgia acquired Kakheta Energy Distribution in September 2017.

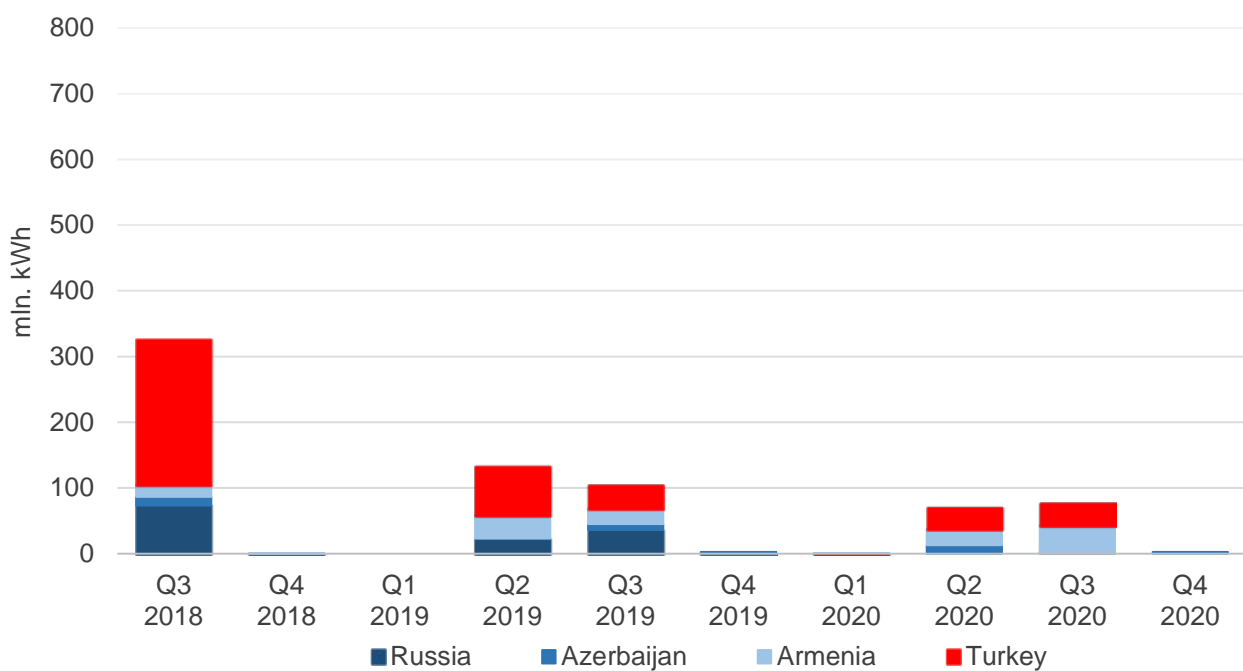
² It must be noted that since market opening in May 2019, large customers began to purchase their electricity on the market, as direct customers.

FIGURE 7 | ELECTRICITY IMPORTS



Source: ESCO

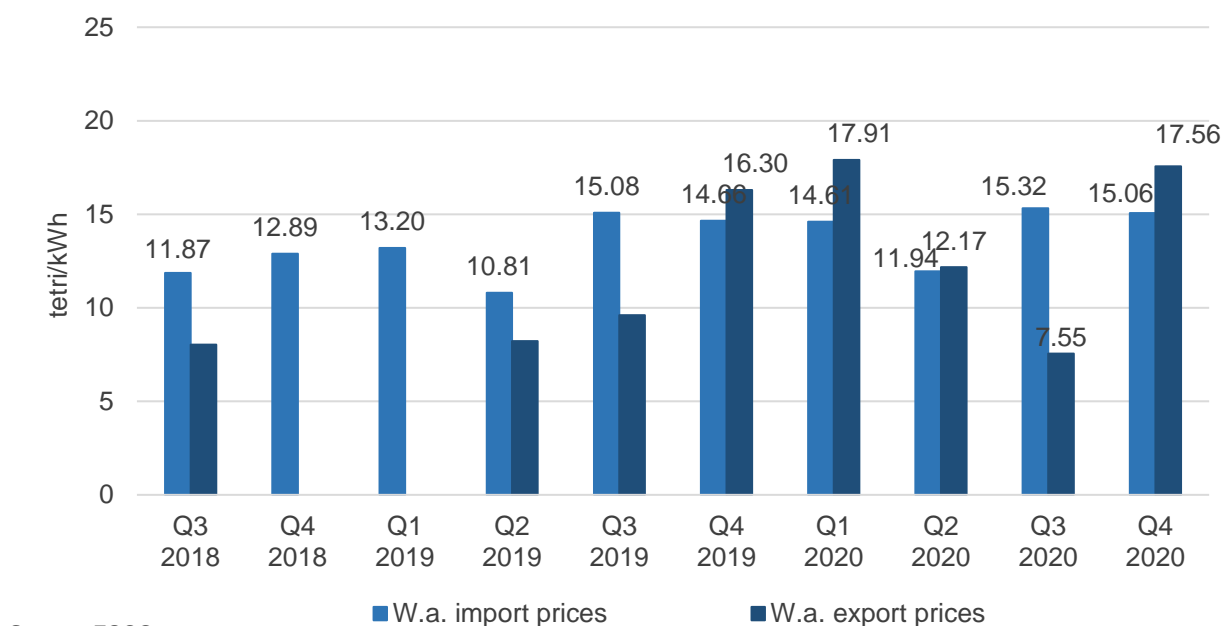
FIGURE 8 | ELECTRICITY EXPORTS



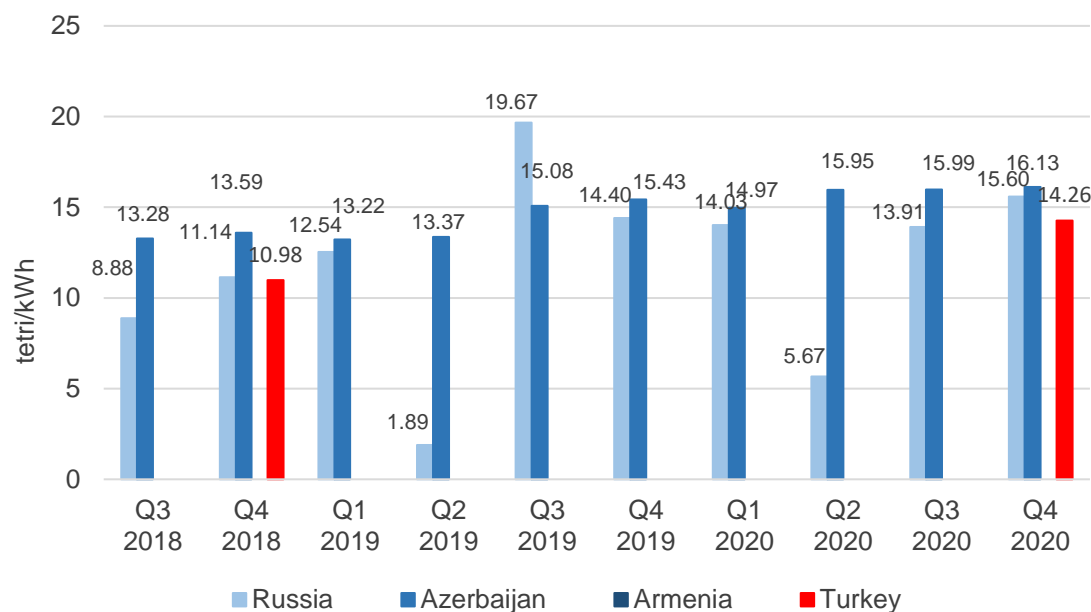
Source: ESCO

The weighted average electricity import price in the third and fourth quarter of 2020, on an annual basis, decreased by 4.3 % and 6.3% in USD, respectively, whereas in GEL, the prices in both quarters increased, by 1.6% and 2.8%, (from 5.21 ¢ or 15.08 tetri per kWh (Q3) and 4.94 ¢ or 14.66 tetri per kWh (Q4) in 2019, to 4.99 ¢ or 15.32 tetri per kWh and 4.63 ¢ or 15.06 tetri per kWh in 2020). The weighted average electricity export price in the third quarter of 2020 decreased by 28.2% in USD and by 21% in GEL (from 3.45 ¢ or 9.61 tetri per kWh in the third quarter of 2019 to 2.48 ¢ or 7.55 tetri per kWh by 2020) (Figure 10). While the export price in the fourth quarter of 2020 increased by 0.03% in USD and by 8% in GEL (from 5.49 ¢ or 16.3 tetri per kWh in the fourth quarter of 2019 to 5.5 ¢ or 17.56 tetri per kWh by 2020).

FIGURE 9 | ELECTRICITY IMPORT AND EXPORT PRICES

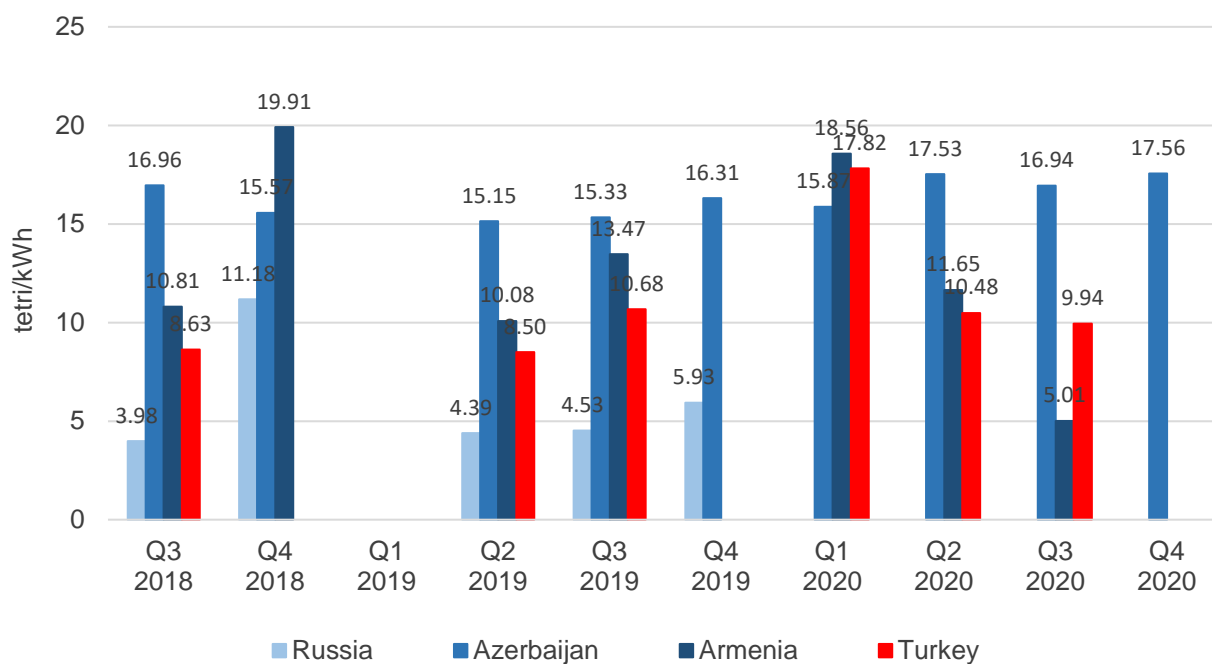


Import prices from Russia in the third quarter of the year stood at 4.53 ¢ or 13.91 tetri per kWh, while they reached 5.2 ¢ or 15.99 tetri per kWh for imports from Azerbaijan. In the fourth quarter, the Russian price amounted to 4.91 ¢ or 15.6 tetri per kWh, while the Azerbaijan price - to 4.93 ¢ or 16.13 tetri per kWh, and the Turkish price - to 4.36 ¢ or 14.26 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 5.52 ¢ or 16.94 tetri, 3.27 ¢ or 9.94 tetri, and 1.64 ¢ or 5.01 tetri per kWh, respectively. Whereas, in the fourth quarter, the price of exports to Azerbaijan amounted to 5.5 ¢ or 17.56 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 third and fourth quarters of 2020, the Georgian electricity generation market was highly concentrated, with HHI values of 2,931 and 3,609, respectively (Figure 12). The level of the third quarter was lower than in 2019, with a HHI value of 3,326, while the level of the fourth quarter was way higher than in 2019, with a HHI value of 1,965. In the consumer segment for the same period, the consumption indexes were just above the threshold for a highly concentrated market in the third quarter of the year, with a HHI value of 2,572, and below the threshold of a highly concentrated market in the fourth quarter of the year with a HHI value of 2,437 (higher the 2019 levels – 2,122 and 2,157) (Figure 13).

FIGURE 12 | HIRSCHMAN-HERFINDAHL INDEX FOR POWER GENERATION

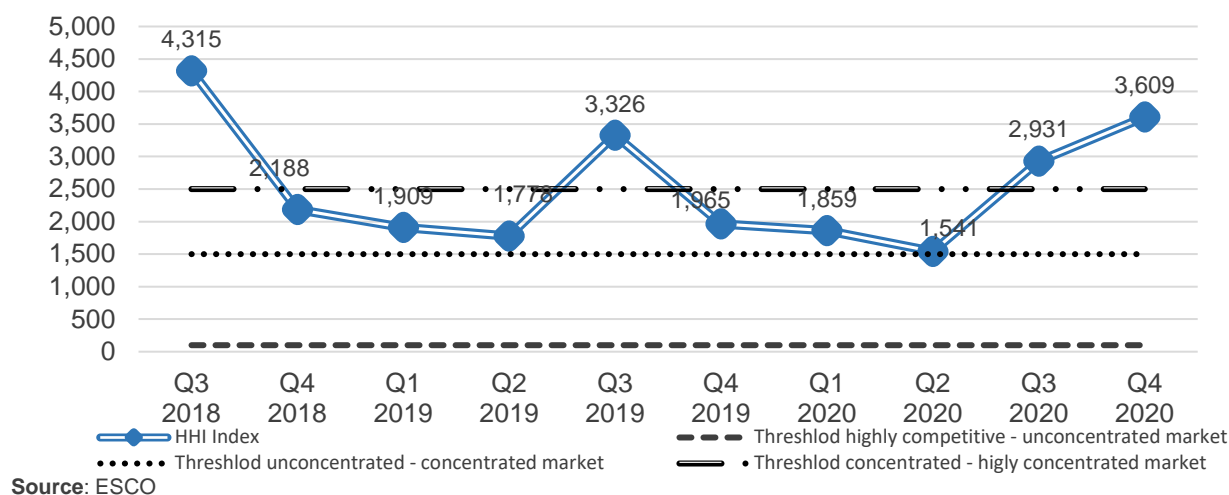
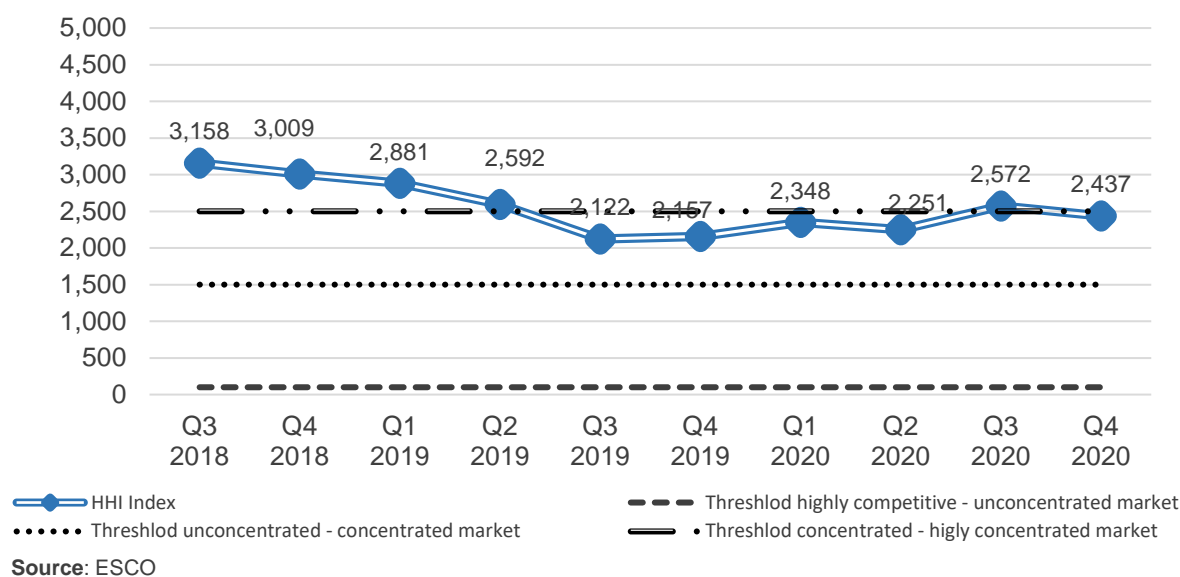


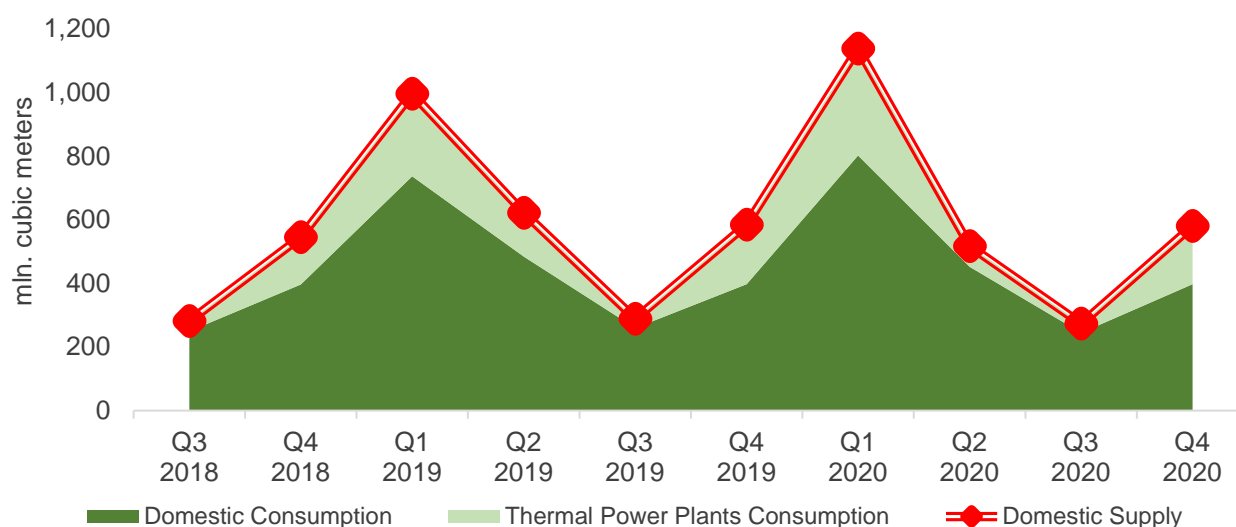
FIGURE 13 | HIRSCHMAN-HERFINDAHL INDEX FOR POWER CONSUMPTION



NATURAL GAS SUPPLY: CONSUMPTION – TRADE

In the third and the fourth quarters of 2020, the total supply of natural gas was, respectively, 273 and 581 mln. cubic meters (a 5.3% and 0.6% decrease, of 289 million and 585 million cubic meters, since the corresponding periods of 2019), of which 28 mln. and 184 mln. cubic meters (10.4% and 31.6% of total supply) were consumed by thermal power plants (a 2.4% and 1.8% decrease - 29 mln. and 187 mln. cubic meters - from 2019 corresponding quarters). The remainder was supplied to the domestic market (Figure 14).

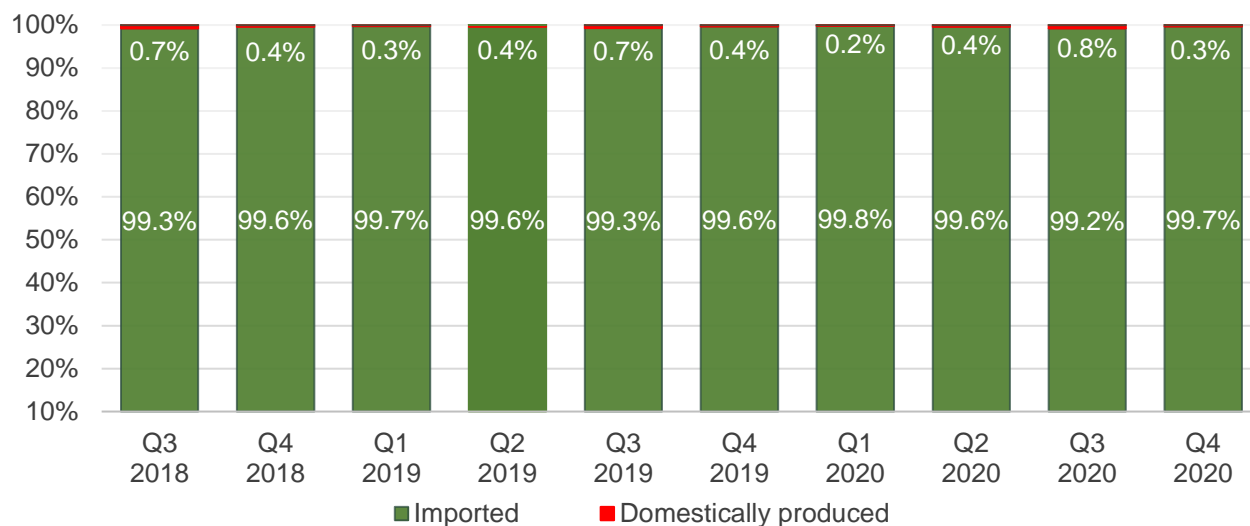
FIGURE 14 | TOTAL SUPPLY AND CONSUMPTION OF NATURAL GAS



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).

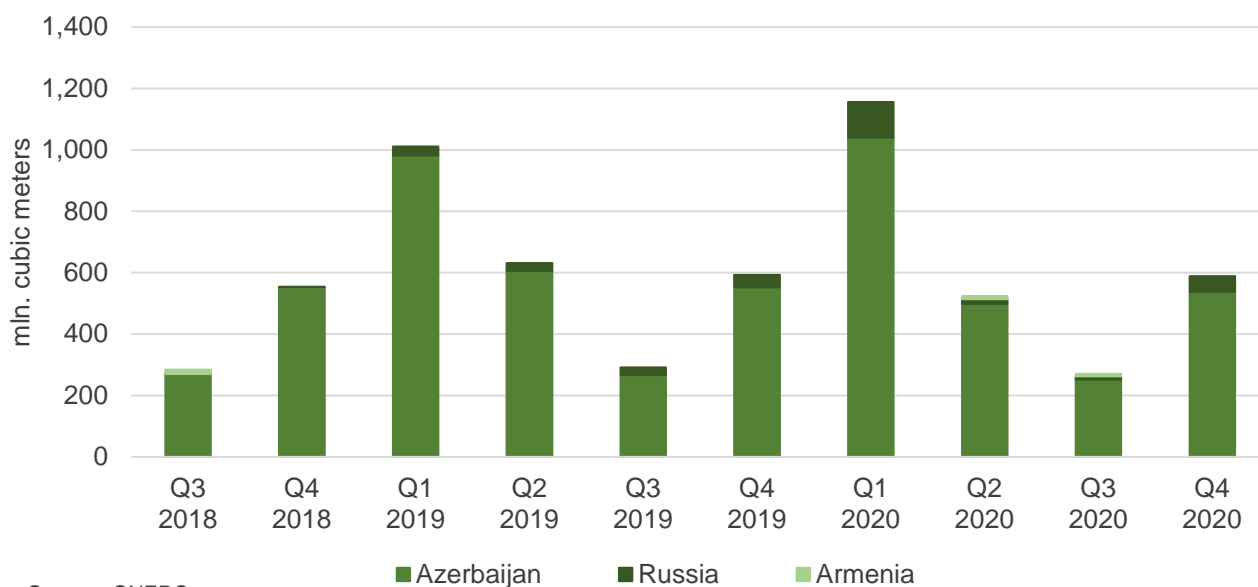
FIGURE 15 | SHARE OF DOMESTICALLY PRODUCED AND IMPORTED GAS



Source: GNERC

In the third and the fourth quarters of 2020, Georgia imported 271 and 589 mln. cubic meters of natural gas, respectively (a 7.1% and 0.6% decrease, down from 292 mln. and 593 mln. cubic meters since the corresponding periods of 2019). 93.1% (Q3) and 91.3% (Q4) of the imports came from Azerbaijan, while an additional 3.6% (Q3) and 8.7% (Q4) came from Russia. The remaining 3.3%, in the third quarter of 2020, came from Armenia (Figure 16).

FIGURE 16 | NATURAL GAS IMPORTS BY COUNTRY



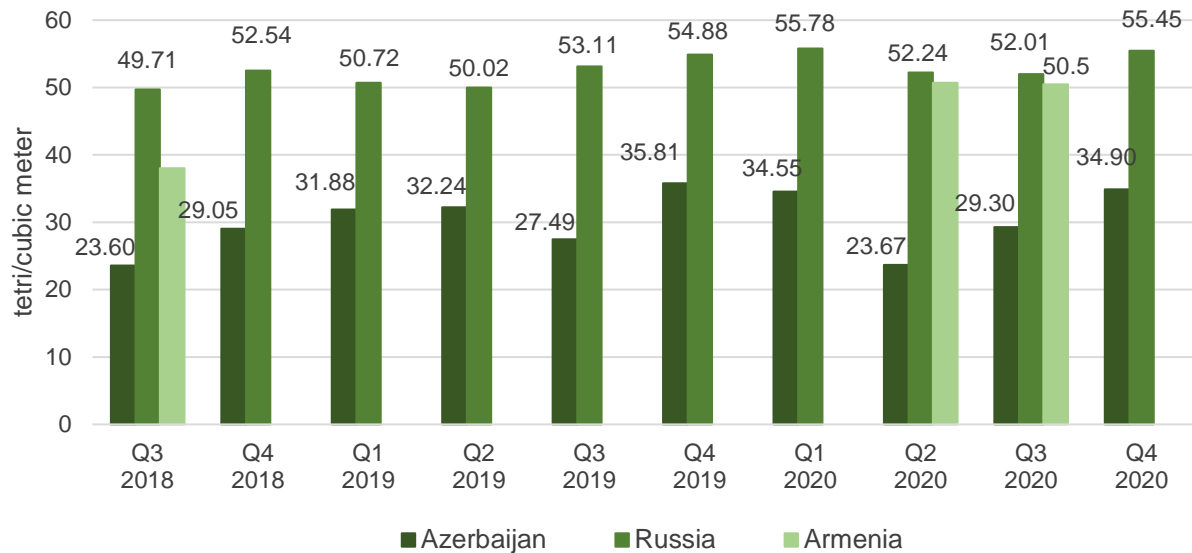
The weighted average natural gas import price in USD decreased by 3.1% and 9.7% in the third and fourth quarters of the year on an annual basis. The GEL price increased by 3.6% in the third quarter and decreased by 1.2% in the fourth quarter of the year (from 10.39 ¢ or 29.74 tetri per cubic meter (Q3) and 12.52 ¢ or 37.13 tetri per cubic meter (Q4) in 2019, to 10.07 ¢ or 30.82 tetri per cubic meter and 11.31 ¢ or 36.69 tetri per cubic meter in 2020) (Figure 17).

FIGURE 17 | NATURAL GAS IMPORT PRICES



In the third quarter of the year, import prices from Russia stood at 16.99 ¢ – 52.01 tetri – per cubic meter, against 9.58 ¢ – 29.3 tetri – per cubic meter for the gas imported from Azerbaijan. In the fourth quarter, the Russian price amounted to 17 ¢ – 55.45 tetri – per cubic meter, while the Azerbaijani price amounted to 10.77 ¢ – 34.9 tetri – per cubic meter (Figure 18).

FIGURE 18 | NATURAL GAS IMPORTS

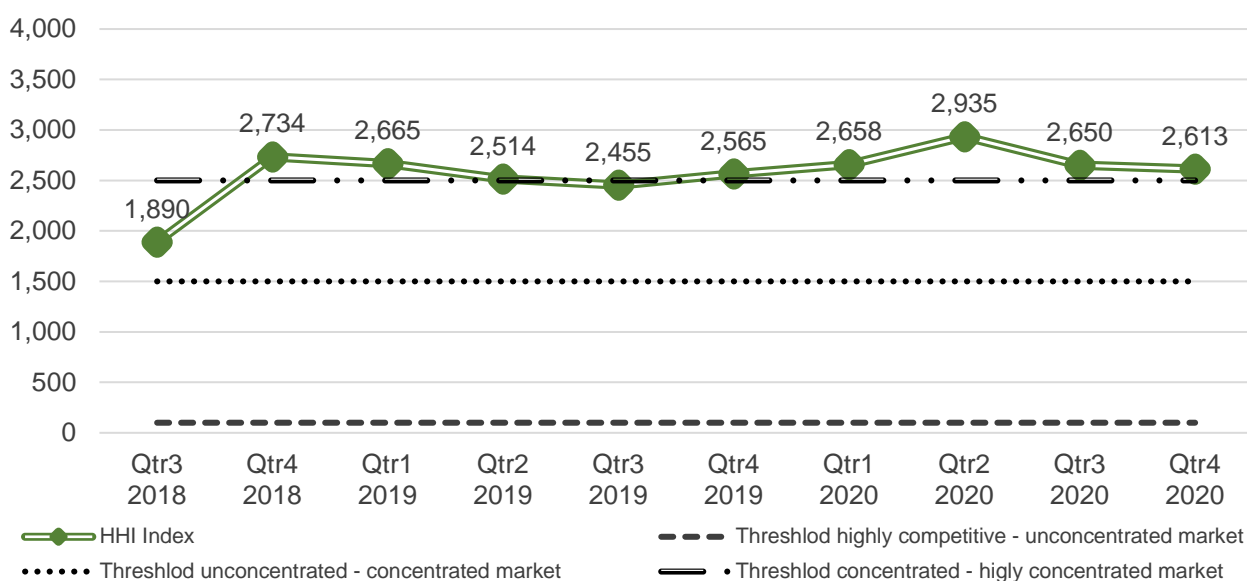


Source: GNERC

NATURAL GAS MARKET CONCENTRATION

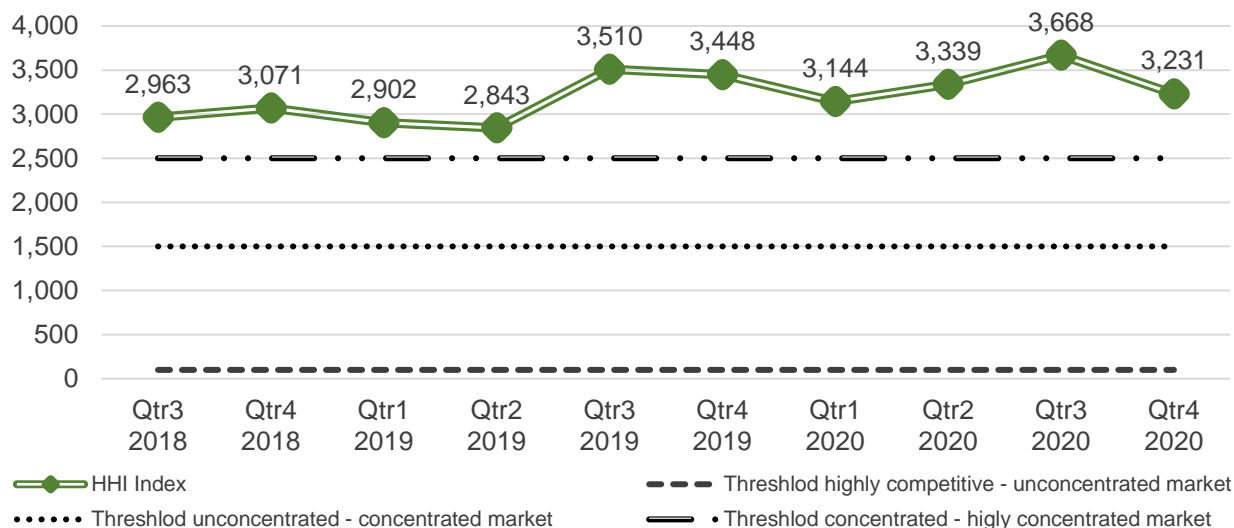
The Hirschman-Herfindahl Index (HHI) of market concentration is utilized to evaluate how competitive the retail and wholesale markets of natural gas have been over the year. In the third and fourth quarters of 2020, the retail market remained above the concentrated market threshold, with HHI values of 2,650 and 2,613, respectively (Figure 19). Q3 and Q4 values were higher than that for the third and fourth quarters of 2019, with HHI values of 2,455 and 2,565. 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 3,668 and 3,231 (for the third quarter above the 2019 level of 3,510 and the fourth quarter below the 2019 level of 3,448) (Figure 20).

FIGURE 19 | HIRSCHMAN-HERFINDAHL INDEX FOR THE RETAIL MARKETS



Source: GNERC

FIGURE 20 | HIRSCHMAN-HERFINDAHL INDEX FOR THE WHOLESALE MARKET

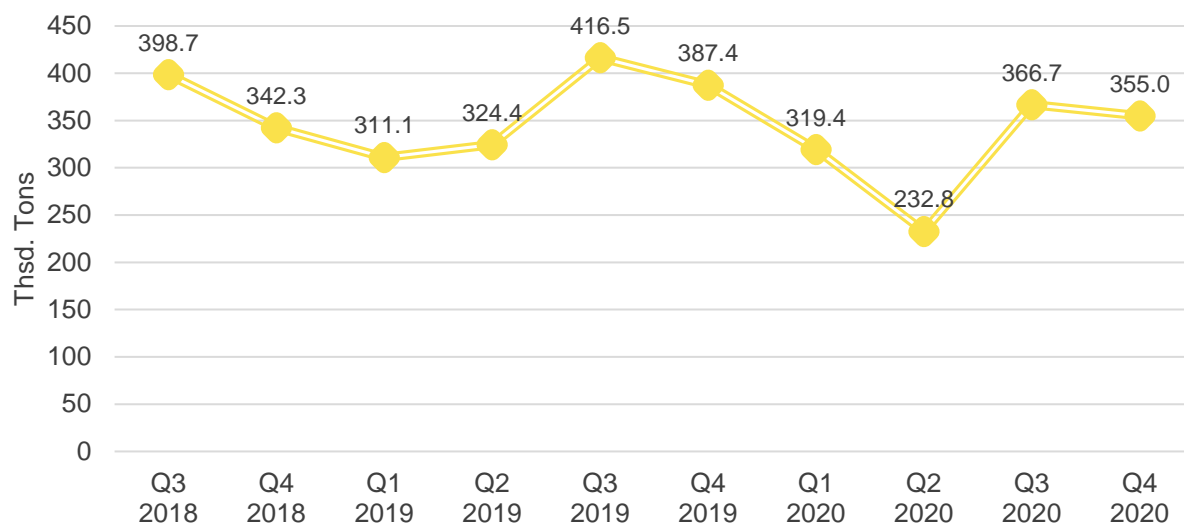


Source: GNERC

OIL PRODUCT SUPPLY: CONSUMPTION – TRADE

In the third and fourth quarters of 2020, the total supply of oil products was 366.7 and 355 thous. tons, respectively (-12% and -8.4% compared to 2019) (Figure 21).

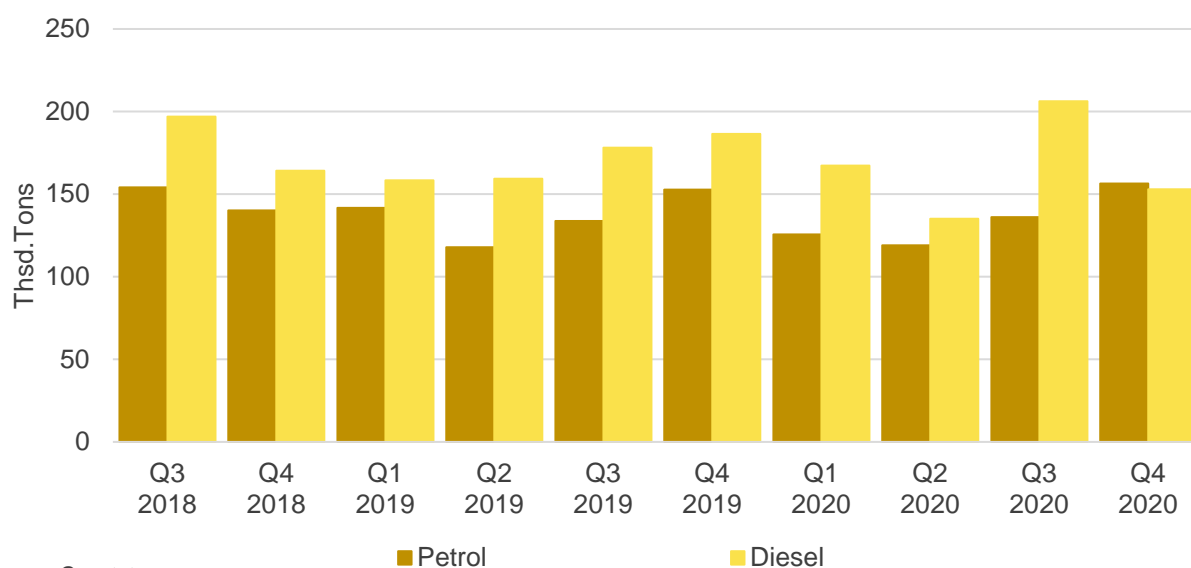
FIGURE 21 | TOTAL SUPPLY OF OIL PRODUCTS



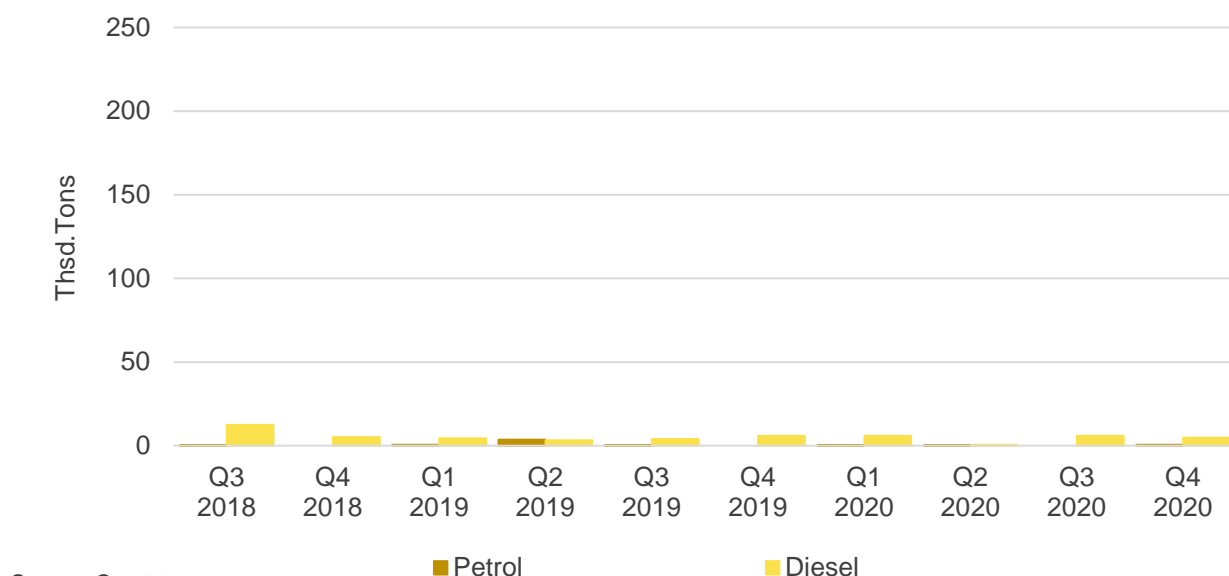
Source: Geostat

In the last two quarters of 2020, 136.02 and 156.39 thous. tons of petrol (+1.7% and +2.3% compared to the corresponding period in 2019), and 206.17 and 152.91 thous. tons of diesel were imported (+15.7% and -18% compared to 2019), respectively (Figure 22). In the same period, petrol export amounted to 0 and 503 thous. tons (compared to 53.27 thous. tons of export and no exports, respectively, in 2019), while diesel exports were 5.84 and 4.67 thous. tons (+46.7% and -20.4% in 2019) (Figure 23).

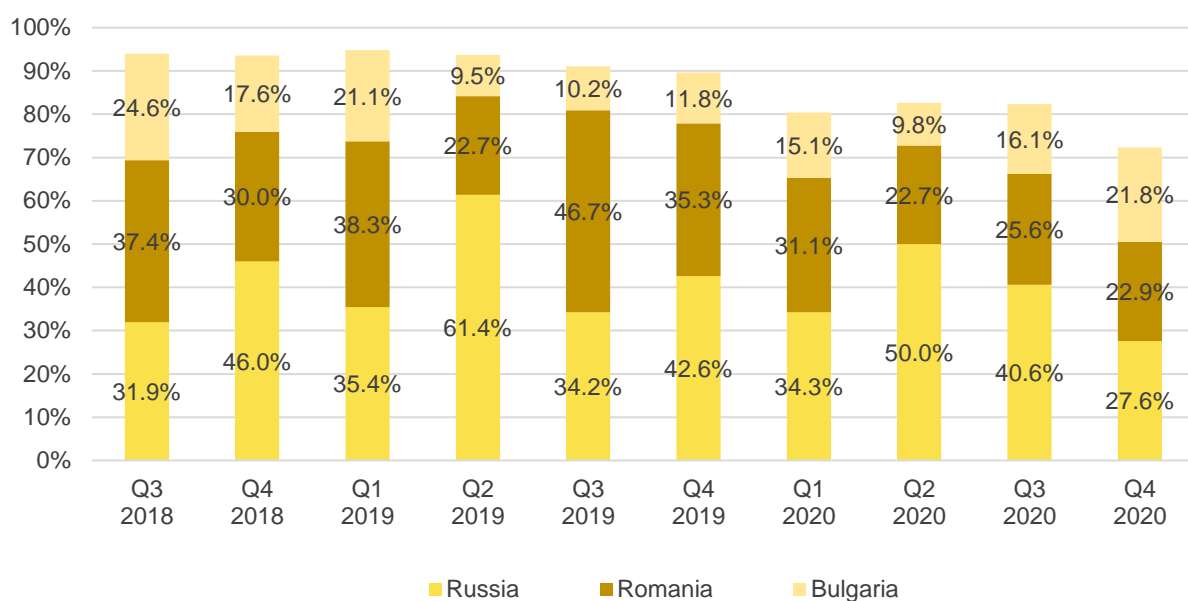
FIGURE 22 | IMPORT OF PETROLEUM AND DIESEL



Source: Geostat

FIGURE 23 | EXPORT OF PETROLEUM AND DIESEL

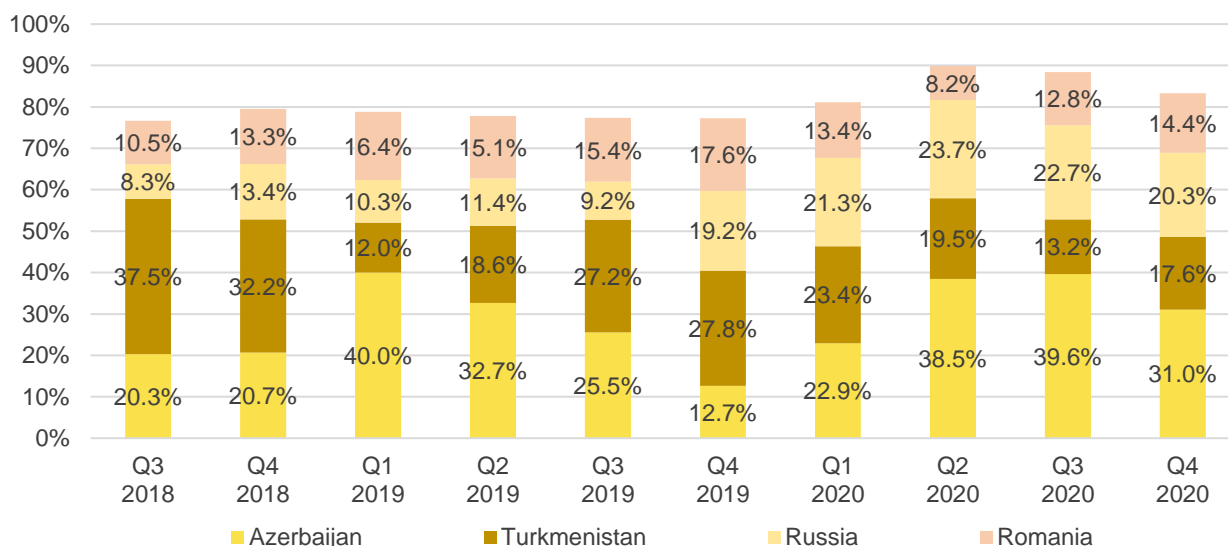
In the third quarter of 2020, Georgian petroleum imports came from seventeen countries, however, 82.3% of total imports were provided by three major import countries, Russia (40.6%), Romania (25.6%), and Bulgaria (16.1%). In the fourth quarter of the year, Georgia imported from fifteen countries, however, 72.3% came from Russia (27.6%), Romania (22.9%), and Bulgaria (21.8%) (Figure 24).

FIGURE 24 | SHARE OF COUNTRIES IN TOTAL PETROLEUM IMPORTS

In the third quarter of 2020, Georgian diesel imports came from thirty-six countries, however, 88.4% of total imports were provided by four major import countries, Azerbaijan (39.6%), Russia (22.7%), Turkmenistan (13.2%), and Romania (12.8%). In the fourth quarter of the year, Georgia imported

from thirty-four countries, however, 83.3% came from Azerbaijan (31%), Russia (20.3%) Turkmenistan (17.6%), and Romania (14.4%). (Figure 25).

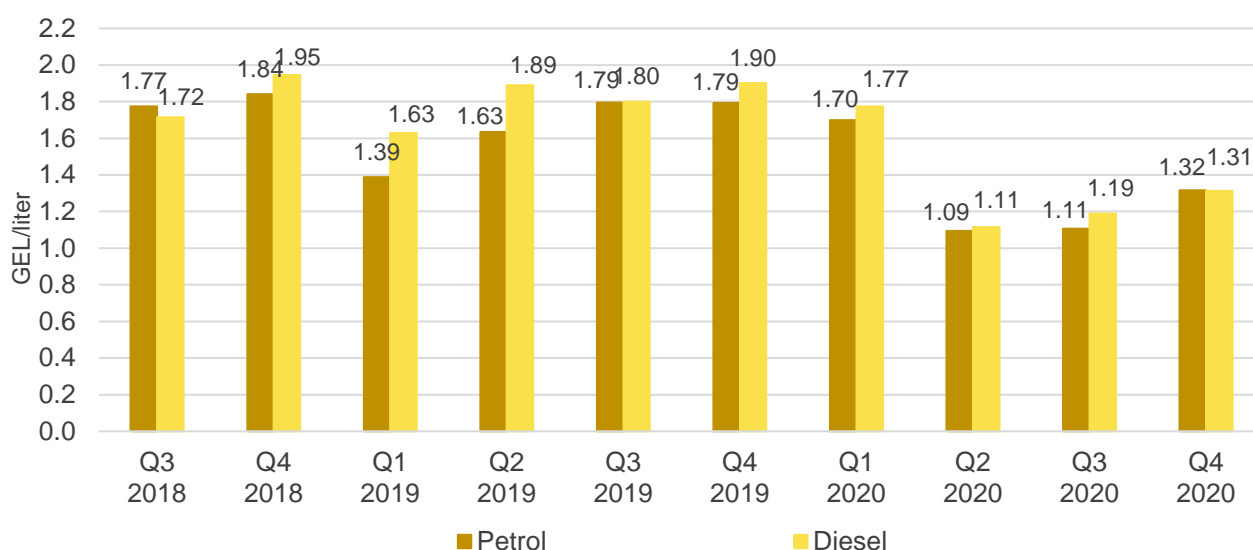
FIGURE 25 | SHARE OF COUNTRIES IN TOTAL DIESEL IMPORTS



Source: Geostat

The weighted average petroleum import prices in USD decreased by – 42.4% and – 32.5% in the third and fourth quarter of 2020, on an annual basis, while the prices in GEL decreased by 38.3% and 26.6%, respectively (from 63 ¢ – 1.79 GEL – and 60 ¢ – 1.79 GEL – per liter in the third and fourth quarters of 2019, respectively, to 36 ¢ – 1.11 GEL – and 41 ¢ – 1.32 GEL – per liter in 2020). The weighted average diesel import prices in USD decreased by 38.3% and 36.7% in the third and fourth quarters of 2020, on an annual basis, whereas the prices in GEL decreased by 34% and 31% in the third and fourth quarters (from 63 ¢ – 1.80 GEL – and 64 ¢ – 1.90 GEL – per liter in the third and fourth quarters of 2019, respectively, to 39 ¢ – 1.19 GEL – and 41 ¢ – 1.31 GEL – per liter in 2020) (Figure 26).

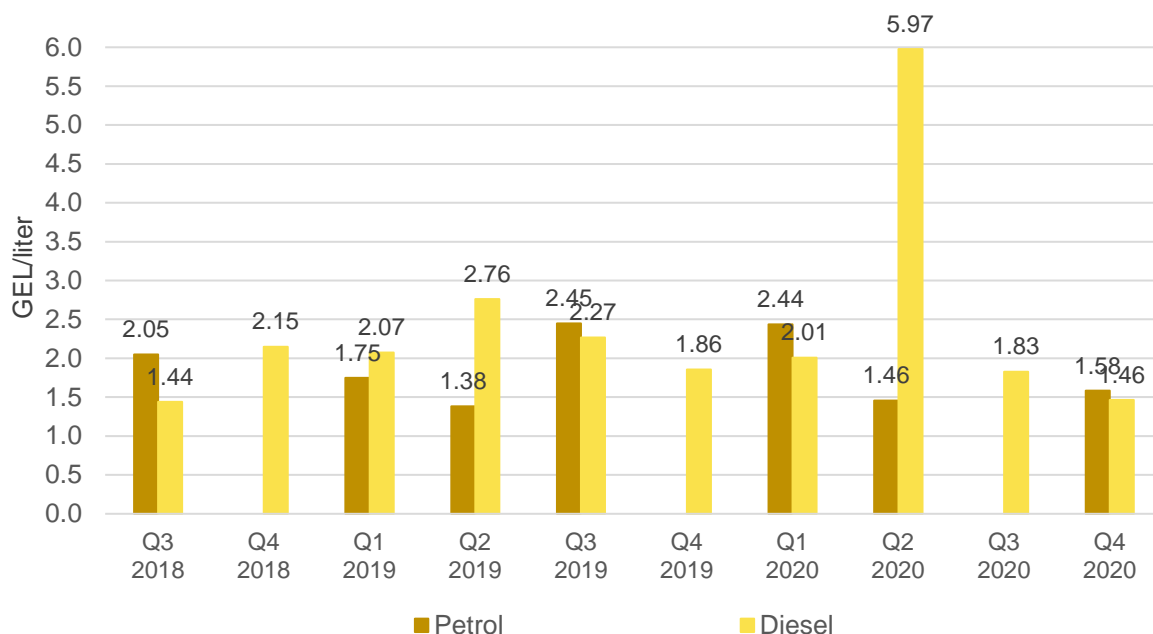
FIGURE 26 | WEIGHTED AVERAGE IMPORT PRICE OF PETROLEUM AND DIESEL



Source: Geostat

Considering petroleum export prices, the weighted average price was 49 ¢ – 1.58 GEL in the fourth quarter of 2020 (as mentioned above, there were no petroleum exports in the third quarter). The weighted average diesel export price in USD decreased by 24.6% and 27% in the third and fourth quarter of 2020, on an annual basis, while the prices in GEL decreased by 19.4% and by 21.2%, respectively (from 79 ¢ – 2.27 GEL – and 63 ¢ – 1.86 GEL – per liter in the third and fourth quarters of 2019, to 60 ¢ – 1.83 GEL – and 46 ¢ – 1.46 GEL – per liter in 2020) (Figure 25).

FIGURE 27 | WEIGHTED AVERAGE EXPORT PRICE OF PETROLEUM AND DIESEL



Source: Geostat