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A Blow to Greece's Economy from the Unprecedently High Electricity and Natural Gas Prices in 2022

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Prepared by IENE's Research Team

IENE Briefing Notes

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Introduction

Last year, 2022, was very different from the previous ones because of the extraordinarily high prices in almost all energy products. The Institute of Energy for SE Europe (IENE) has recently published a stocktaking Energy Analysis Bulletin for 2022, which presents detailed data about how the market behaved (market performance) last year.

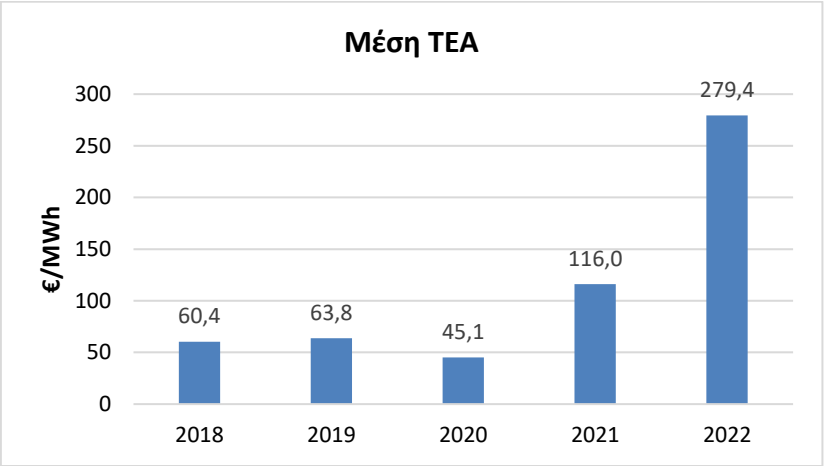
The particularly high prices of natural gas and, by extension, of electricity, which prevailed throughout 2022, had a serious impact on the whole economy (domestic and non-domestic), as the gradual jump in energy costs to historically high levels affected both directly, by impinging upon industrial production, other businesses, and household consumption, as well as indirectly by passing on costs throughout the supply chain to the final consumer.

However, it is deemed necessary, in addition to listing various useful statistics elements and graphs, to provide a critical presentation and highlighting of the most important issues that arose. This Special Report by IENE aims at emphasizing the key market realignments that occurred, explains the reasons (including the Russian invasion of Ukraine) and briefly mentions the prospects for 2023.

Steep Rise in the Price of Electricity

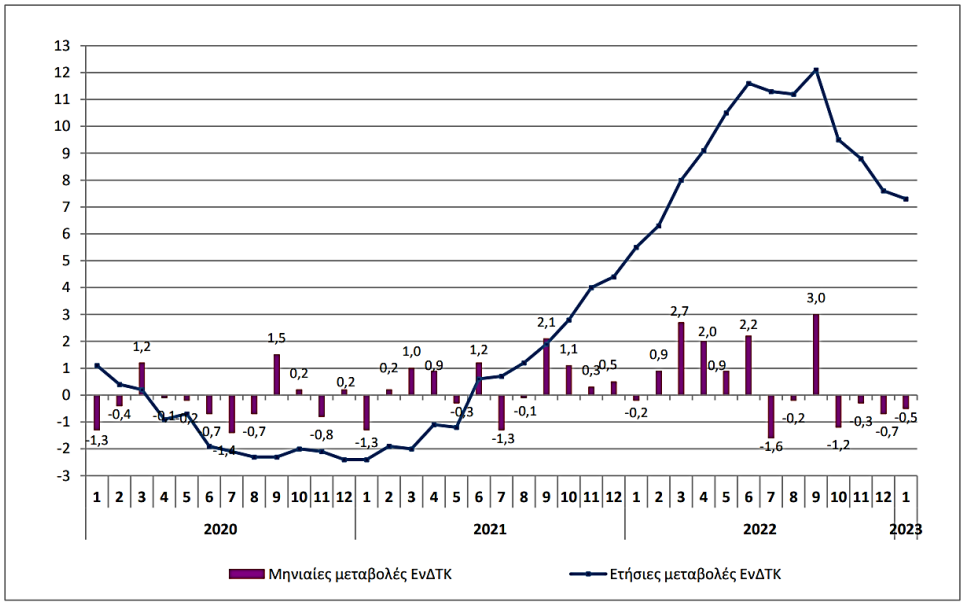
According to the IENE Energy Analysis Bulletin for 2022 **(1)**, the average Market Clearing Price (MCP) at the Hellenic Energy Exchange was formed by average at €279.39/MWh last year, up 141% compared to 2021, which amounted to €116.02/MWh. The significant increase in the price of domestic electricity is primarily attributed to the rise in natural gas prices in Europe and, by extension, in Greece and in the similarly impressive increase of emission prices, which in 2022 exceeded €98 per ton **(2)**. Within five years, significant increase of the average MCP has been recorded, having almost quintupled compared to 2018 and 2019 levels.

Figure 1: Average Market Clearing Price (MCP) in 2018-2022



The increase in average MCP resulted in passing the cost on to prices consumer, thus causing their significant increase and, subsequently, obliging the government to introduce large-scale subsidies in order to avoid a further rise of inflation and a potential social unrest.

Figure 2: Annual and Monthly HICP Rate (%)[1]



[1] The Harmonized Indices of Consumer Prices (HICP) are compiled by EU member states, according to European Union Regulations, in order to provide comparable data for the inflation of the Member States and for the convergence criterion of price stability, within the framework of the Economic and Monetary Union. The HICPs form the basis for the calculation of the European Consumer Price Index and of the Consumer Price Index of the Monetary Union, which provide the official measures of inflation in the EU (27 Member States) and in the Eurozone (19 member states) respectively (Source: Hellenic Statistical Authority – Greek initials: ELSTAT)).

As an example, the evolution of the Harmonized Index of Consumer Prices (HICP) for the month of January 2023 is as follows. The HICP of January 2023, compared to the corresponding Index of January 2022, showed an increase of 7.3% against an increase of 5.5% which occurred during the corresponding comparison of the year 2022 with 2021. in January 2023, compared to December 2022, the HIPC showed a decrease of 0.5% against a decrease of 0.2% noted during the corresponding comparison of the previous year.

The average HICP of the February 2022-January 2023period, compared to the corresponding Index of the twelve months of February 2021 - January 2022, showed an increase of 9.4% against an increase of 1.2% noted during the comparison of the corresponding twelve months between February 2021 and January 2022 with the twelve months of the February2020 - January 2021 period.

Natural Gas Prices Soared

The weighted average import price of natural gas in 2022 was €116.3/MWh, recording a significant increase of 148% compared to €46.9/MWh in 2021, while almost quintupling compared to the levels of2018. Daily Balancing Gas Price (Greek initials: HTAE) on a monthly basis is calculated as the average of the daily balancing gas price, as announced on the website of the National Natural Gas System Operator (Greek initials: DESFA).

Figure 3: Balancing Gas Price in 2018-2022

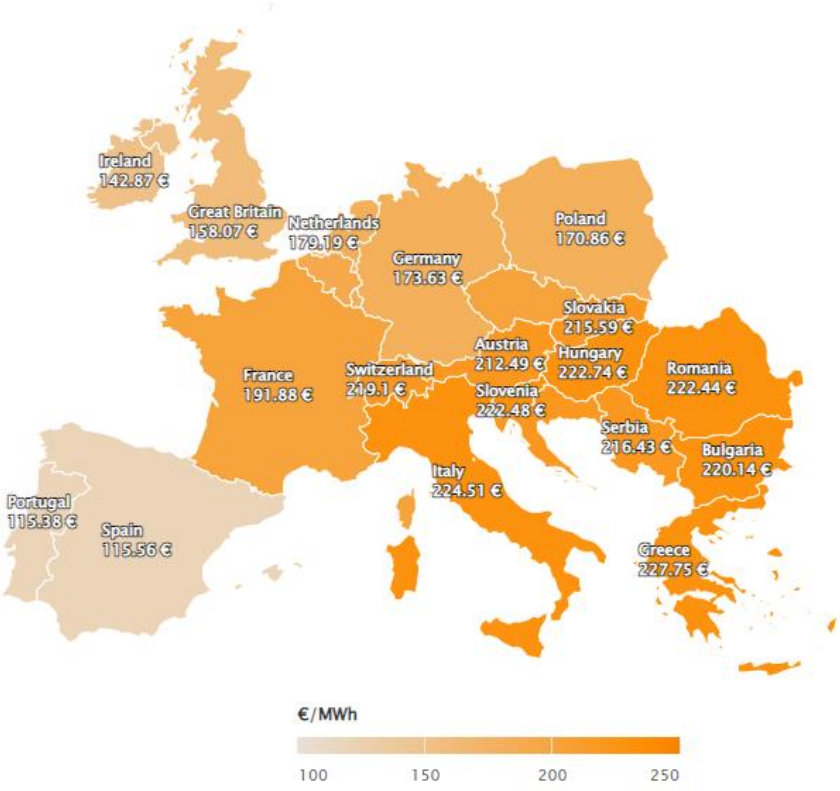
The increase in the price of natural gas in Greece came from the huge increase in the wholesale price in the TTF of the Netherlands, which is considered the European benchmark, contributing to the rise of the natural gas supply contracts through pipelines, as well as of the LNG contracts. The upward course of the price of natural gas in the Dutch TTF reflects the difficult supply conditions that occurred throughout

2022 in Europe, with the reduction or even the interruption of Russian natural gas flow and with shortages in receiving LNG cargoes.

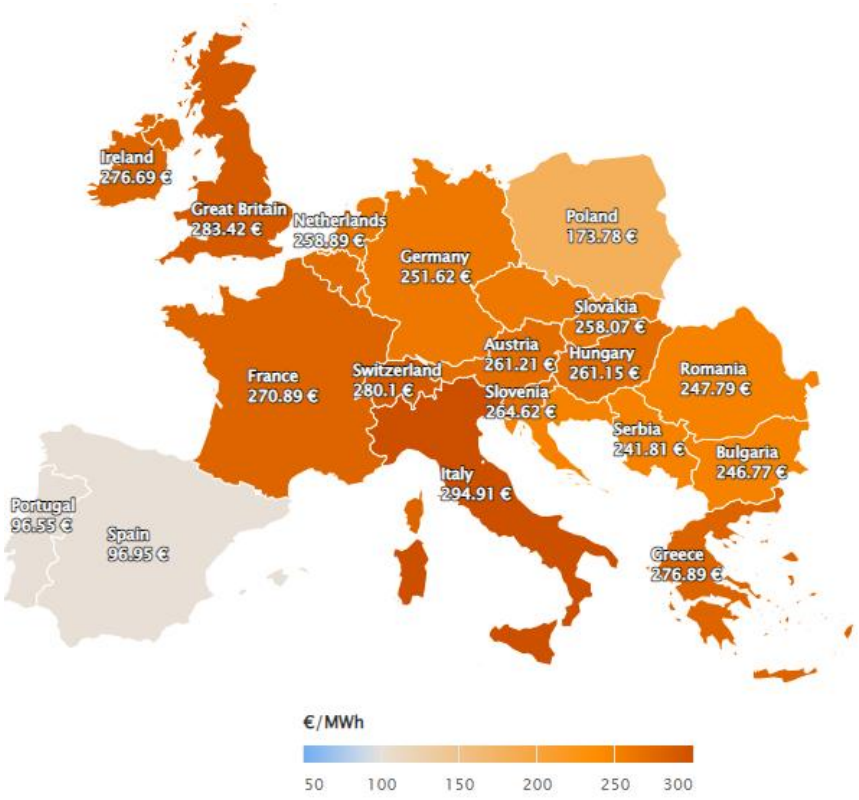
Subsidies Without Limits

In order to protect the Greek consumer from high electricity and natural gas tariffs, the state allocated subsidies in the region of€8.2 billion over the last 18 months, according to data recently presented by the Minister of Environment and Energy, Mr. Kostas Skrekas **(3)**. The amount corresponds to approximately 4% of GDP and, in addition to the huge increases in electricity prices caused by the prolonged energy crisis, it also covered the structural weaknesses of the domestic electricity market. Greek wholesale market, where the real electricity cost is formed, is one of the most expensive in Europe.

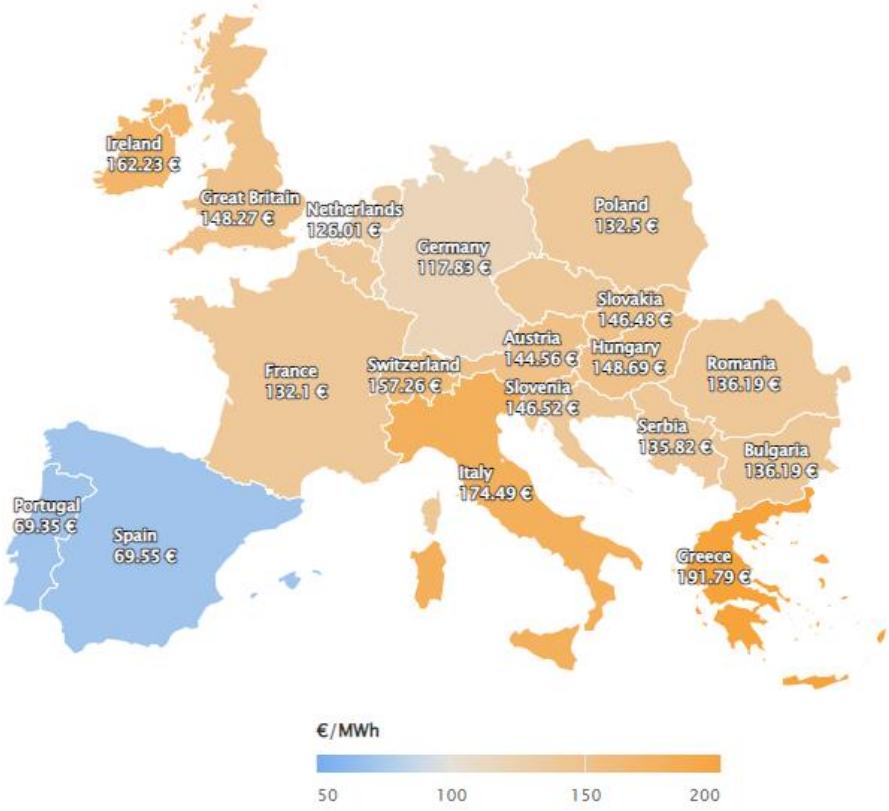
Figure 4: Wholesale Electricity Prices (€/MWh) in the Day- Ahead Market in Europe, November 2022-January 2023



December 2022



January 2023



It is worth noting that electricity subsidies continue as normal, while those for natural gas were stopped in February 2023, given that the wholesale price for that month (based on the month-ahead pricing model and the January average price) is estimated to be at €63/MWh, leading to a retail price at the level of €115/MWh, which is considered as manageable by the financial staff of the Greek government.

Following the publication by the supply companies of the nominal charges for February 2023, which were reduced by 60% on average, compared to those of January of this year, a significant reduction of subsidies occurred, regarding both the total fund, but also the ex-post subsidy of large consumption for households.

In any case, the reduction of subsidies for February signals a return to normality and "scissors" disbursements from the Just Transition Fund, whose resources are being reduced, as prices on the wholesale electricity market decline. It is estimated that for January, the inflows to the Just Transition Fund from the mechanism of price caps per technology in power generation are approximately €80 million, i.e. it is a only a very small part of the total amount that has been recovered since last July (when the said mechanism was activated) reaching €3 billion in total.

The price cap mechanism sets maximum compensation prices for electricity producers, varying on the technology they use, for the quantities of electricity of energy they sell through the Hellenic Energy Exchange. This means that producers are no longer paid according to the System Marginal Price but with fixed prices that will be set monthly, which will cover the costs of their units and leave a reasonable profit margin. The difference between this price and the market price will be directed to the Just Transition Fund. It is worth noting that the creation of the Just Transition Fund helps to provide financial support on a monthly basis to all households and professionals. Also, the newly formed excess revenue recovery mechanism (interim mechanism introduced in July 2022) from power generation companies facilitates the collection of funds, which are channeled into the Fair Transition Fund to boost subsidies to consumers.

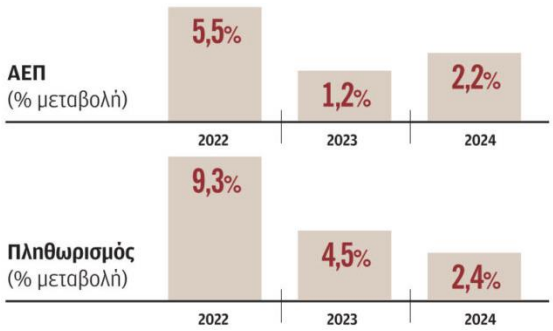
Effects of High Energy Prices on Inflation and the Economy

According to the winter economic forecasts of the European Commission which were recently published **(4)**, the growth rate in Greece in 2022, 2023 and 2024 is forecast to remain above the eurozone and EU average, with the Commission to proceed with a slight downgrading of the estimate for 2022 but with an upgrade of these for 2023 and 2024. Specifically, the Commission predicts for Greece a growth rate of 5.5% in 2022, 1.2% in 2023 and 2.2% in 2024. For the eurozone, the Commission forecasts growth of 3.5% in 2022, 0.9% in 2023 and 1.5% in 2024, against growth in the EU of 3.5% in 2022, 0.8% in 2023 and 1.6% in 2024. It is noted that the Commission's latest forecasts for the development of the Greek economy are revised

slightly downwards for 2022 to compared to those of November (6% was then the forecast for 2022) and slightly upwards for 2023 and 2024 (1% and 2% being the forecast in November ’22 respectively).

As far as inflation is concerned, the Commission estimates that in Greece it was formed at 9.3% in 2022 and predicts that it will decrease to 4.5% in 2023 and to 2.4% in 2024. For the eurozone, the Commission estimates that the inflation rate was 8.4% in 2022 and predicts it will fall to 5.6% in 2023 and 2.5% in 2024. In the EU, inflation stood at 9.2% in 2022 and is projected to decrease to 6.4% in 2023 and 2.8% in 2024. The "key" to the decline in inflation, according to the European Commission, is the reduction of energy prices.

Figure 5: European Commision estimates for GDP and Inflation of Greece in 2022-2024



However, consumers and businesses still face a high energy costs and core inflation rate (headline inflation excluding energy and unprocessed food) continued to increase in January, further reducing the purchasing power of households. As the inflationary pressures persist, monetary tightening is expected to continue, burdening business activity and exerting a slowdown on investments.

Electricity Demand Falls in 2022

As far as electricity demand is concerned, this was 51,860,588 MWh in 2022, reduced by 1.25%, compared to 2021, when it amounted to 52,517,448 MWh. It is noteworthy that after the first quarter of 2022, energy demand decreased due to the high prices of natural gas and, by extension, of electricity, which started to shoot up since last February, when Russia invaded Ukraine. Within a period of five years, electricity demand in 2022 was approximately at the same levels as in 2018.

Figure 6: Electricity Demand per Month in 2021-2022

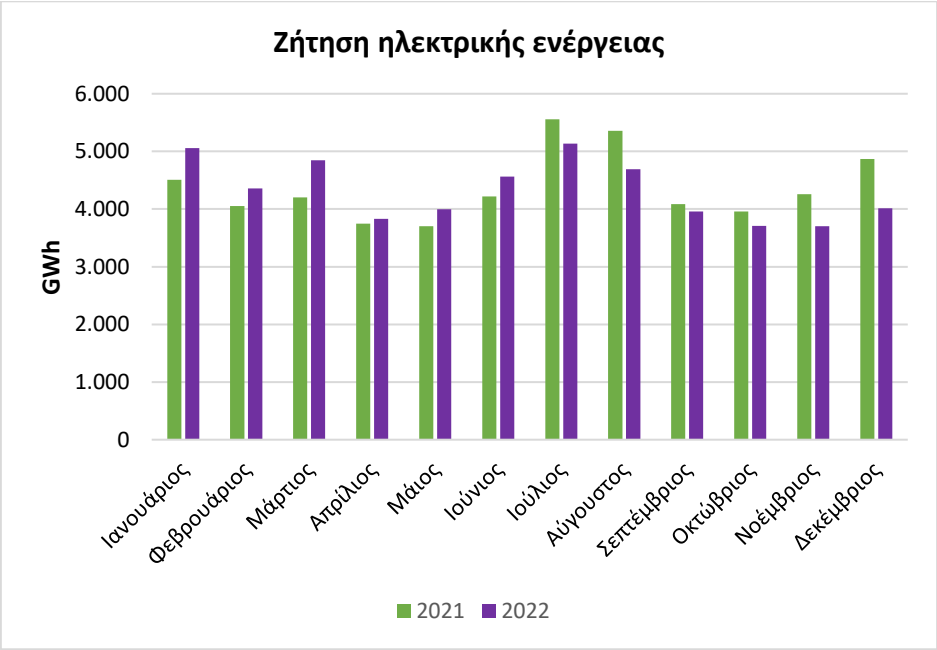
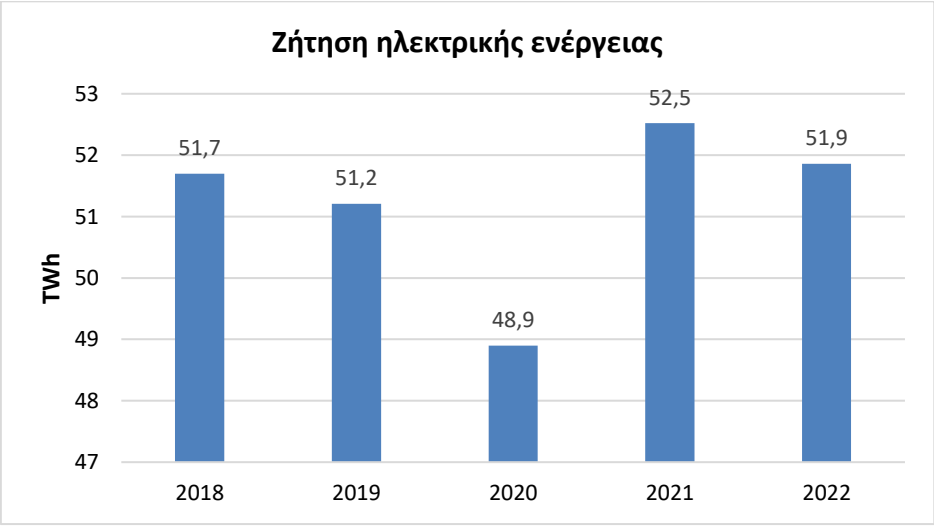
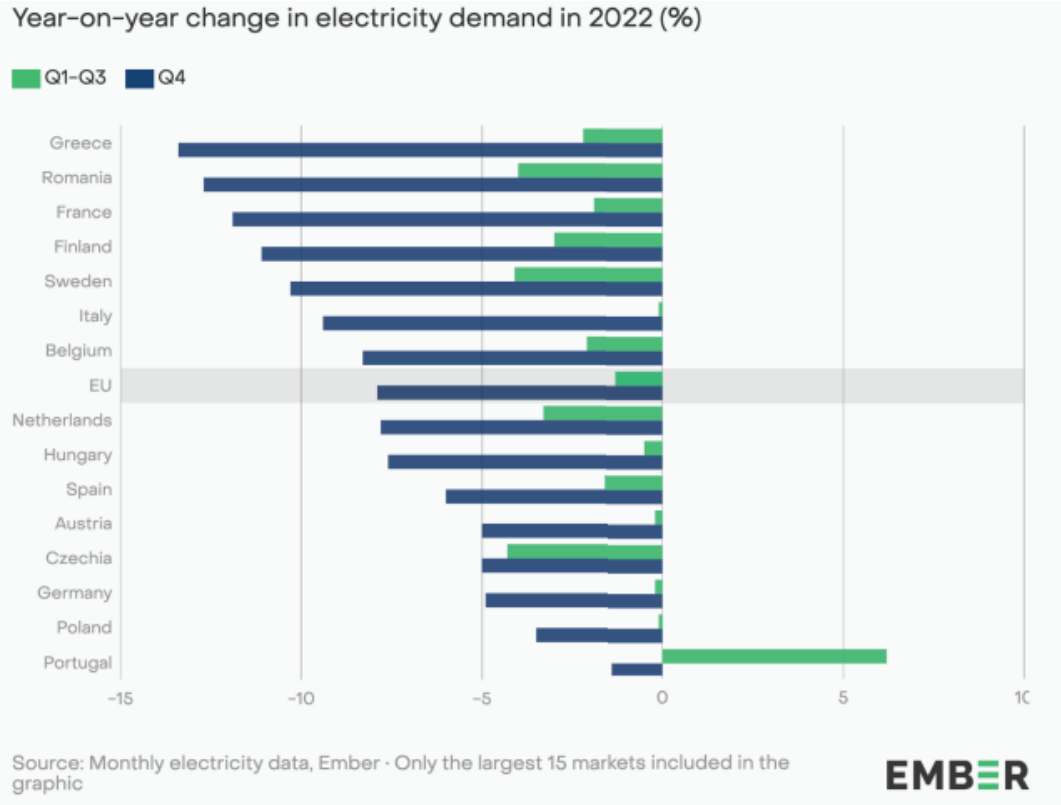


Figure 7: Electricity Demand per Month 2018-2022



The drop in electricity demand recorded in Greece in the last months of 2022 was the highest in Europe, according to an analysis by Ember think tank **(5)**. In particular, the reduction came close to 13% during the fourth quarter of 2022, preluded by a smaller decrease of around 2.5% for the first three quarters of the year. Average demand in the EU contracted by 8% in Q4 2022.

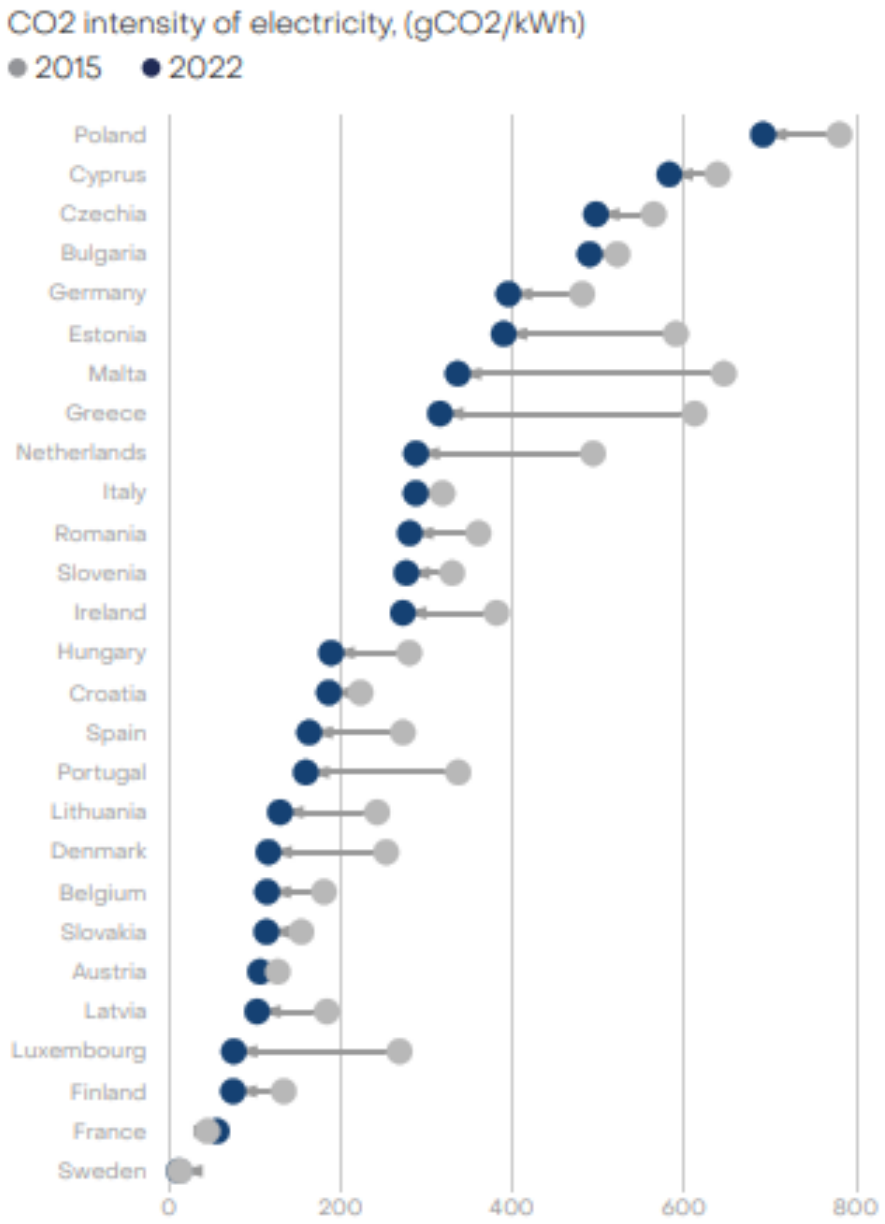
Figure 8: Electricity Demand Fell in Winter in Several EU countries



Also, Greece had the second-best performance in a pan-European level in terms of its share of photovoltaic production in the total domestic power generation (from 9.6% to 12.6% within one year). In this regard, Ember points out that Greece is expected to achieve the target of installing 7.7 GW of photovoltaics by the end of it 2023, i.e. seven years ahead of schedule.

In terms of CO2 emissions from the power generation sector, Greece is 9th on the list with the most pollutants and 8th in the list of the most "polluting" electricity networks. Despite this, the CO2 intensity of the domestic electricity sector was greatly reduced in the last 8 years, as it can be seen in Chart 9.

Figure 9: CO2 Intensity of Electricity in the EU-27, 2015 and 2022



Huge Electricity Imports Cause Alarm

In 2022, electricity imports were set at 8,790,319 MWh, increased by 5.52%, compared to 2021, when they amounted to 8,330,622 MWh. However, total electricity imports in 2022 moved to lower levels than the five-year average (10.4 TWh).

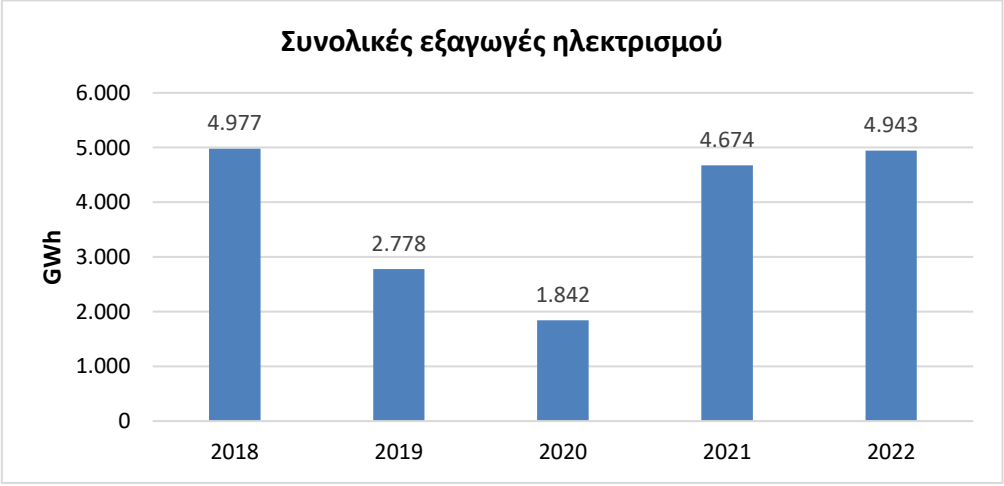
However, we must mention that the very high percentage of electricity imports of energy in the Greek electricity system creates tendencies of dependence, while

burdening the economics of the system and contributes to the price rise for the average consumer.

Figure 10: Total Electricity Imports in 2018-2022

In 2022, electricity exports were set at 4,942,648 MWh, increased by 5.75%, compared to 2021, when they amounted to 4,673,814 MWh. The total electricity exports in 2022 were around its 2018 levels.

Figure 11: Total Electricity Imports in 2018-2022



In 2022, Greece, for another year, recorded net imports that amounted to 3,847,670 MWh, increased by 5.22% on an annual basis (2021: 3,656,810 MWh). It is worth noting that the contribution of electricity imports from the neighboring countries, mainly from Bulgaria, was particularly large in 2022, as the wholesale electricity price was cheaper compared to Greece.

For a number of years (see period 1990-2015), electricity imports covered a relatively small percentage of the electricity consumed. These now have increased significantly due to the greater penetration of RES, the generation of which is variable, in order to cover the gaps arising from domestic production, but also for cost reasons. Therefore, electricity imports are now moving to particularly high rates, which in some months even reach 25%.

Therefore, when electricity is more expensive in Greece and cheaper in neighboring countries, then domestic production decreases and imports increase, without any special effort to reduce the cost of domestic power generation. This definitely leads to an upward trend in terms of electricity imports, which affects negatively the energy security of the country.

Figure 12: Total Net Electricity Imports in 2018-2022

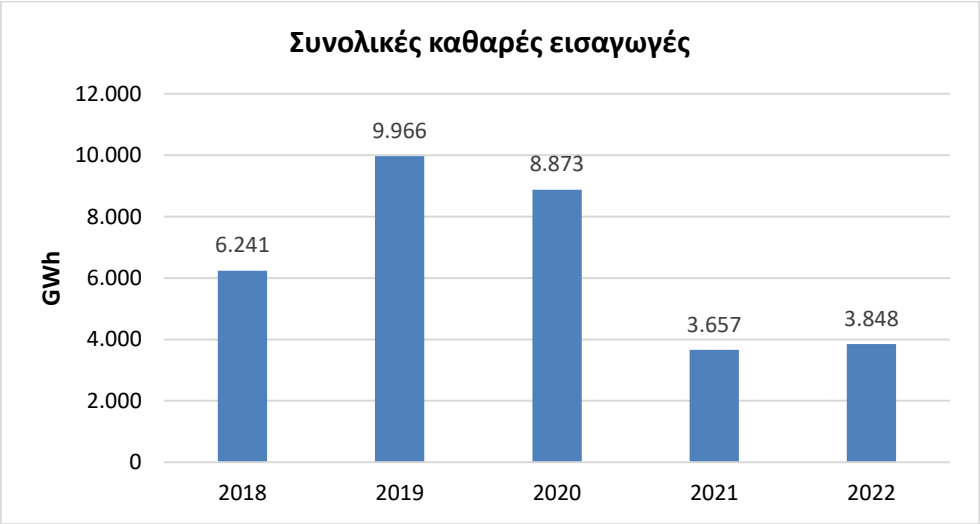
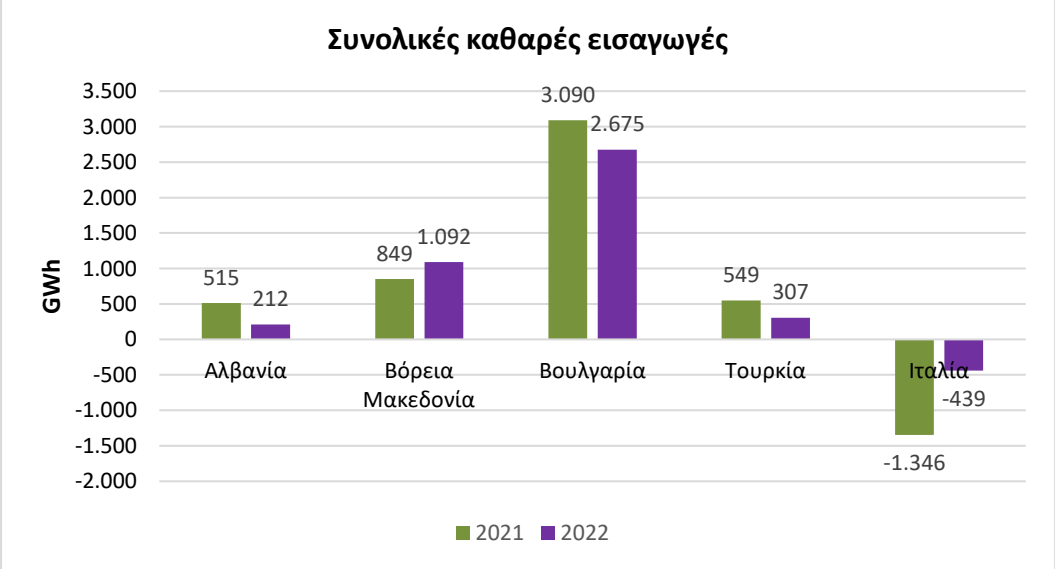


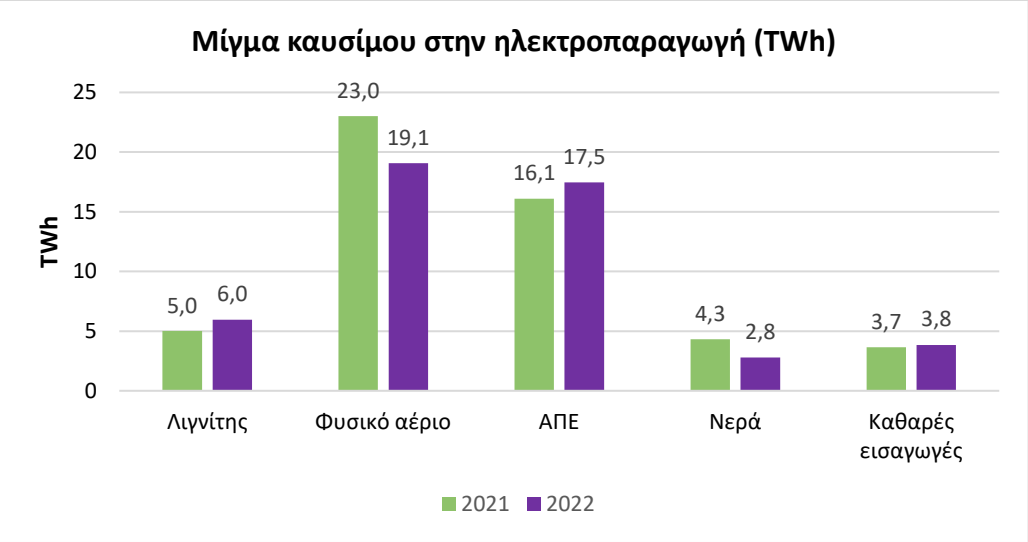
Figure 13: Total Net Electricity Imports Per Neighboring Country in 2021-2022



Strong Diversification of the Power Generation Mix Registered in 2022

In addition to increased electricity imports in 2022, there has been significant diversification of the power generation mix, compared to 2021. One of its main characteristics was the rise in the share of RES which reached 34% (+4.0%) compared to 2021, alongside higher net electricity imports from neighboring countries (+4.0%). In fact, a gradual rise has been recorded for the last five years, as from about 10,000 GWh provided by RES (excluding hydro) in 2018, their production has increased to 10,600 GWh in 2019, to 13,700 GWh in 2020, to 16,100 GWh in 2021, and finally reaching 17,500 GWh in 2022.

Figure 14: Fuel Mix in Power Generation (TWh) in 2021-2022



It is worth noting that the electricity generation mix in 2022, compared to 2021, had slightly increased net imports, lower hydro use, as well as an increase in RES and lignite and a significant drop in the use of natural gas, which is expectable within the framework of the general effort to reduce dependence on Russian natural gas.

Figure 15: Fuel Mix in Power Generation (%) in 2021

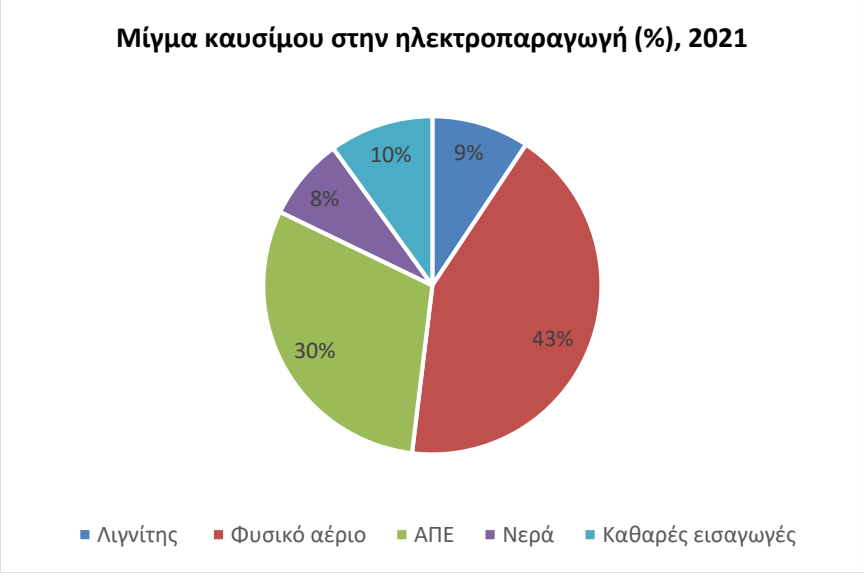
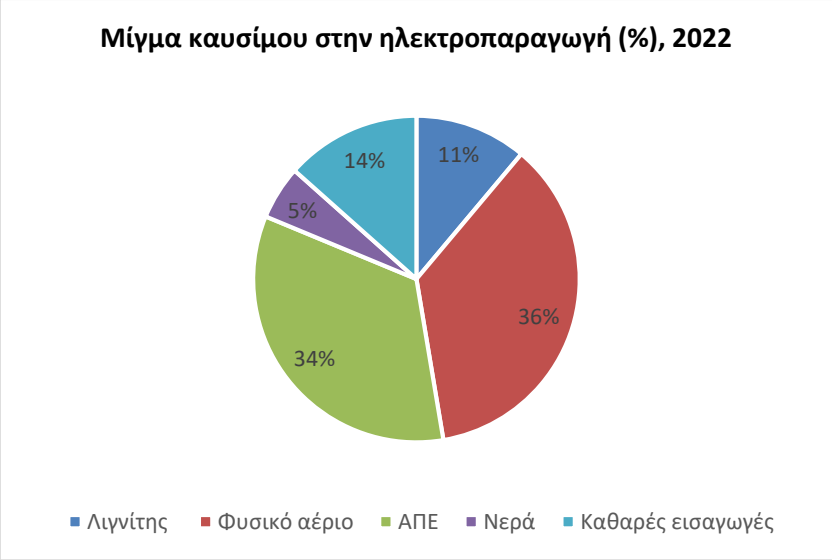


Figure 16: Fuel Mix in Power Generation (%) in 2022



It is possible that in certain periods of time the RES produced 100% of the required electricity but this was limited to only two days and for a very specific time space, without withdrawing the base units (lignite, natural gas). Essentially, RES would not be possible to operate without the required base load provided mainly by the natural gas units and secondarily by lignite and imports.

In 2022, the installed capacity from wind and photovoltaics increased significantly in Greece, with the latter constituting the largest part of the total installed capacity. In particular, the installed capacity from wind farms in 2022 exceeded 4,681 MW, compared to 4,452 MW in 2021, while the installed capacity from PV was set at 5,466 MW in 2022, significantly higher than the 4,126 MW in 2021. In total,

approximately 1,700 MW of new RES were installed in Greece in 2022 (total estimated installed RES capacity for 2022: 10,624 MW), when about 4,350 MW were installed during the 2014-2021 period.

Moreover, in 2022, a reduction in infusion of energy in RES stations was recorded for the first time in Greece, due to the inability of the distribution network to absorb it. This is a very worrying development, as applications for new RES are pending (1,000 MW for photovoltaics, a number that is expected to decrease thanks to the clusters that have been created by HEDNO – Greek initials: DEDDIE) and the ones for new storage stations have by far exceed the capacity of transmission and distribution networks to accommodate extra power. At the same time, the EU has, for the first time, (as far as Greece is concerned) approved a support scheme for storage units, the first tender for wind and photovoltaics under the new model, the framework for the development of offshore wind farms, but also the passing of the second "wave" of simplifying renewable energy licensing process (August 2022).

Significant Gas Exports Achieved in 2022

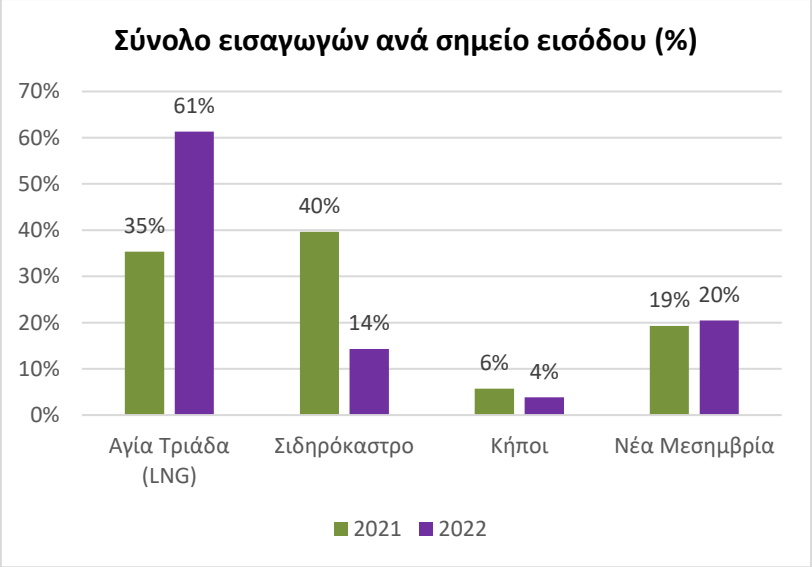
Regarding natural gas, there were serious variations in 2022 compared to previous years, as (a) a decline in demand was recorded for the first time since 2018, (b) there was a change in the structure of imports in terms of countries of origin and (c) there was a large reduction in Russian natural gas deliveries with a simultaneous significant increase in natural gas deliveries from LNG to the Agia Triada entry point. In 2022, Greece's total natural gas imports amounted to 62 TWh, decreased by 12% on an annual basis and very close to the levels of 2020 (63 TWh).

Figure 17: Total Natural Gas Imports (TWh) in 2018-2022

As previously mentioned, Greece's total natural gas imports for 2022 amounted to 62.0 TWh, with 38.1 TWh or 61% imported through Agia Triada (LNG coming from the terminal in Revythoussa), 8.9 TWh or 14% imported through Sidirokastro, 2.4

TWh or 4% were imported through the Kipoi entry point, while 12.7 TWh or 20% via New Mesembria. The contribution of LNG by 61% the 2022 is considered one of the highest rates in recent years, highlighting the important role that this fuel has already played and is expected to play in the future in the context of moving away from Russian natural gas.

Figure 18: Total Natural Gas Imports per Entry Point in 2021-2022



In addition, there have been, for the first time, significant exports of natural gas through Greek system towards the neighboring countries. In fact, it is noteworthy that in 2022 an increasing trend was recorded in the total deliveries of natural gas in Greece, mainly driven by exports. Specifically, total deliveries (domestic consumption and exports) of natural gas increased by 11.11%, reaching 86.18 TWh (from 77.56 TWh in 2021).

Actually, the remarkable 288.68% increase recorded in exports of natural gas (from 7.6 TWh in 2021 to 29.54 TWh in 2022) overcovered the reduction of domestic consumption by 19.04% (from 69.96 TWh to 56.64 TWh). In particular, 34.27% of total deliveries for 2022 concerned natural gas exports, mainly to Bulgaria from the interconnection point in Sidirokastro, while smaller quantities of natural gas (through the Greek natural gas network) were also exported to Italy via the TAP pipeline from Nea Mesimvria.

In general, in addition to the hitherto the basic flow of natural gas from North to South, in 2022 a significant reverse flow was observed for the first time. Greece is gradually becoming a natural gas exporting country, as large volumes of LNG arrive at the Revythoussa terminal, a part of which is channeled mainly to Bulgaria and from there on to other countries to the North (e.g. Serbia, Romania, Hungary). The companies are trying to book slots in Revythoussa, while the construction of new

infrastructure is now being planned, such as the FSRU in Alexandroupolis, Corinth, Volos and Thessaloniki.

Having its geographical position and the existing and under construction infrastructure in its territory as comparative advantage, Greece seeks to upgrade its place on the energy map of the region, since LNG now tends to become Europe's main strategic fuel and the country is becoming one of the main entry gateways in the South towards the main European energy markets.

The positive outcome of the ongoing exploration for natural gas deposits offshore Crete **(6)** is also expected to play an important role in curtailing Greece's imports. After completing the seismic surveys within the first quarter of 2023 in the two major seas concessions south and southwest of Crete and in the Ionian, the first phase of seismic is concluded, during which 2D and 3D seismic surveys were conducted in 7 regions. In the next period, 2024-2026, begins the phase of exploratory drilling, from which the size and exploitation potential of the deposits to be discovered will be attested.

Plan to Double Lignite Production Fails

Regarding lignite, the Greek Prime Minister announced on April 6, 2022, from Kozani, due to reasons of energy security, the change of course in energy policy and the restoration of this specific fuel in the plans for the energy balance of the country, as well as the doubling of lignite production by 2022 **(7)**. In this context, PPC already has proceed with a significant increase in investment in the mining sector, with the company having set a goal of increasing lignite extraction by 50% by the end of 2022. Before the crisis, PPC mined about 10.5 million tons of lignite per year **(8)**, while in the context of the increase it is expected to exceed 15 million tons in the coming two years, with the additional cost of mining estimated at around 50 million euros, raising the Company's total expenditure on mines to €150 million. With the increased amounts of lignite to be mined, it is estimated that there may be an increase by more than 40% in the electricity produced from lignite.

However, the production of lignite units cannot be doubled in an instant, when in fact many of them have already been put out of operation, with the excavators in many mines having been decommissioned. The remaining ones are operating above their limits and complement the energy coverage as far and as much they can, while there is always the risk of damage that will test the limits of the system.

However, the gap from lignite production was mostly covered by natural gas units, while the increase in lignite production in the current circumstances is advantageous as it leads to a limitation of imports of expensive natural gas, thus improving the country's trade balance.

It is worth noting that there is already a small increase in the share of lignite in Greece's energy balance. The recovery of lignite production and its use in the domestic power generation mix led the contribution of lignite to 11% in 2022, compared to 9% in 2021, aiming to further increase in the first months of 2023, if circumstances so require.

However, the doubling of lignite power generation in 2022 turned out not to be attainable goal and accordingly its contribution to their containment of prices was negligible. Things are expected to improve in 2023, as the commercial operation of the new "Ptolemaida V" lignite unit will significantly help, adding 660 MW to PPC's lignite potential. With this unit to operate with much greater efficiency compared to existing units and with considerably reduced emissions.

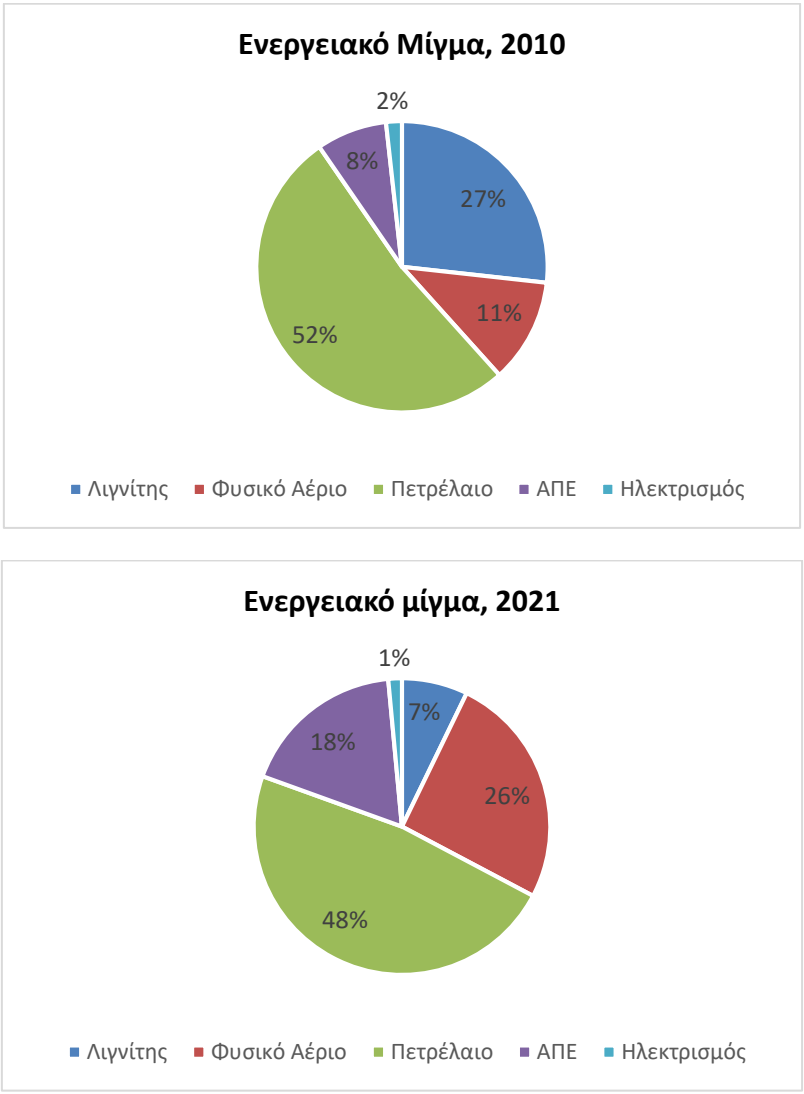
IPTO (Greek initials: ADMIE) also considers essential the operation of this specific unit until 2028 on lignite and from 2031 on natural gas, as shown in its National Resource Adequacy Assessment for 2025- 2035. The viability of the new "Ptolemaida V" unit was strongly contested in the pre-crisis period and PPC had planned its operation from 2025 with natural gas, which, however, is considered a very uneconomical solution. Since, however, the energy crisis has occurred, the market fundamentals have been overturned in relation to natural gas and lignite costs. Its operation, to the extent that it does not face fuel supply problems that will affect its efficiency, is expected to significantly strengthen the electric system of the country in the coming years.

However, the lack of fuel appears to be the factor that kept lignite power generation at low levels in 2022. According to our information, PPC was avoiding using lignite in order not to run out in the event of a cold winter, which the system would need its lignite reserves to endure.

What Energy Mix Do We Want?

In recent years, renewable energy sources have deservedly won a permanent place in the energy balance and in the fuel mix of electricity generation in Greece. However, the policy of completely moving away from fossil fuels and switching to cleaner sources of energy, instead of reducing, on the contrary, increases the need for more supplies of oil and natural gas, since only these two fuels can currently sustain electricity prices at low levels.

Figure 19: Energy Mix (%) in 2010 and in 2021



In support of the above, one needs only to observe the developments of the last few months, where on the one hand we have significant progress in the licensing and construction of not one, but four, floating LNG stations - these are the FSRU units in Alexandroupolis, Thessaloniki, Volos and Corinth - while in in a few weeks, PPC's new large lignite unit in "Ptolemaida V" (660 MW), as previously analyzed, and the combined cycle unit of Mytileneos in Aspra Spitia (826 MW) will be put into commercial operation. It is also worth mentioning the recent start of construction of the natural gas plant (840 MW) of PPC-Kopelouzou Group-DEPA in Alexandroupoli, increasing the installed capacity, based on fossil fuels, by approximately 2.3 GW, while other conventional units are to come online (combined cycle units with fuel natural gas of Elpedison, GEK TERNA -MOTOR OIL and PPC, DEPA Emporias and Damco Energy).

Figure 20: Electricity Mix (%) in 2010 and in 2021

Admittedly, recent developments suggest that conventional lignite and natural gas units are and will remain essential to the operation of the domestic energy system for several years to come, in order to achieve the necessary energy balance, while baseload production is deemed a sine qua non factor in order for renewables to operate smoothly.

This does not mean that the penetration of additional solar and wind power generation should be limited. However, there should be a more substantial control on the entry of new units and RES potential into the system, so as to avoid phenomena of rejection of the energy produced. Therefore, the further penetration of RES both in the energy balance of the country and in the electricity mix cannot be achieved without the operation of a significant energy storage potential (which is

still lagging behind) and thus makes the contribution of conventional energy sources necessary.

What Can be Expected in 2023

During this year, several energy developments are going to be launched, which can be summarized as follows:

1. A de-escalation of natural gas and electricity prices is expected, as the risk of an interruption in the supply of natural gas to Europe is slowly moving away, as it has succeeded, within a period of 12 months, to replace most of the natural gas imported from Russia with alternative sources (i.e. LNG, increased natural gas production from Norway, etc.). If natural gas prices remain at current levels and do not exceed €100/MWh, it is expected that there will be a limitation of the inflationary pressures recorded in recent months.
2. There is no apparent risk of natural gas supply interruption, as LNG imports are continuously taking place, while the construction of the Alexandroupolis FSRU and the planning for the construction of new ones are underway, while an FSU has already been added to the existing Revythoussa terminal.
3. The priority is to increase the supply of natural gas through the TAP pipeline from Azerbaijan, in case of a complete interruption of Russian natural gas.
4. Seismic surveys to locate natural gas deposits offshore Crete are in progress, while seismic surveys in the Ionian Sea have been completed and the interpretation of the data is underway.
5. The first tender is expected to be held by the end of 2023, in order to "lock in" the operational and investment support of the energy storage units, which must be constructed by the end of 2025.**(9)**
6. The further development of electricity and natural gas networks is on track, according to the operators' development programs.
7. The conclusion of long-term contracts for the supply of energy produced by RES, i.e. "green" PPAs, is encouraged, which is expected to have a positive impact on the formation of wholesale electricity prices. For example, the Mytilineos group and EDP Renewables recently signed a PPA for the "green" energy to be produced from a portfolio of wind projects with a total capacity of 78 MW.**(10)**

Conclusions

High electricity and natural gas prices led to unprecedentedly high energy prices and subsequently to energy subsidies (€8.2bn in the last 18 months), causing increases in key economic indicators due to rising prices of basic goods and services, which almost completely derailed the Government Budget. However, the Greek economy exhibited a steady growth in the first half of 2022, but rising inflation affected growth in the second half of the previous year. For the full year 2022, average annual inflation was recorded at 9.6%, the highest level since 1994. **(11)**

The war in Ukraine and its immediate impact on the security of supply and prices for natural gas, electricity and oil was inarguably the central event of 2022 in the energy sector. However, there were other developments in the past year, whether connected to the energy crisis or not, that left a strong impression and affected consumers and entrepreneurs alike in the sector.

These developments for 2022 **(12)** are summarized as follows:

1. The war in Ukraine significantly contributed to the spike in energy prices, which had already started their upward trajectory from the summer of 2021– Surge in average MCP and decrease in electricity demand.
2. Lignite made dynamic comeback for power generation.
3. The great investment interest in RES "jammed" the electric grids and brought about cuts in electricity injected into the system.
4. Greece recorded massive electricity imports, higher than ever before.
5. For the first time, Greece became net exporter of natural gas to northern countries, especially in Bulgaria, and strengthened its influence in SE Europe.
6. Despite the obvious need to strengthen the energy mix with conventional sources, used by most consumers, there is no coordinated policy under the new National Energy and Climate Plan (NECP), as it deals exclusively with RES and hydrogen.

Among the challenges, the need of coordination between “tighter” monetary policy and targeted fiscal support measures, as well as the risk that the economic slowdown will be prolonged, and the energy crisis will gain new intensity in the second half of 2023 stand out.

It is worth mentioning that the high volatility in energy prices has caused increased uncertainty for businesses and households, while an escalation of the so-called "imported" inflation cannot be excluded, mainly due to the high prices of energy goods, with the deflation indices of imports and exports significantly exceeding the corresponding indicators of consumption and fixed capital investment.

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