

Household Energy Price Index for Europe

MAY 30, 2022

May Prices Just Released

The most up-to-date picture of European household electricity and gas prices: VaasaETT and two leading European energy market authorities collaborate to track monthly energy prices in 33 European countries.

Energie-Control Austria, the Hungarian Energy and Public Utility Regulatory Authority (MEKH) and VaasaETT are delighted to publish the results of our study of residential electricity and gas prices covering 33 European countries. Our price survey now includes every EU Member State in addition to selected members of the European Energy Community (Montenegro, Norway, Serbia and Ukraine), plus Great Britain and Switzerland.

We would like to use this opportunity to thank the energy market authorities, energy suppliers and distributors for their time and cooperation to ensure the quality of our data.

If you would like to know more about the latest developments in residential energy prices, visit our project webpage at www.energypriceindex.com and subscribe to the free monthly update of the HEPI index for Europe.

IN THIS MONTH'S EDITION

Significant electricity price increases in Athens, Dublin, Ljubljana and Riga

Electricity price increases in Berlin, London, Nicosia, Oslo, Prague and Rome

Significant electricity price decreases in Amsterdam, Brussels and Copenhagen

Electricity price decreases in Helsinki, Madrid, Paris, Stockholm, Tallinn and Vienna.

Significant natural gas price increases in Dublin, Lisbon, Madrid, Prague and Sofia

Natural gas price increases in Athens, Copenhagen, Riga and Tallinn.

Significant natural gas price decreases in Amsterdam, Berlin, Brussels and Vienna.

Natural gas price decreases in Bern, London and Paris.

Story of the month

"Iberian exception: Spain and Portugal capping gas cost for power"

European Energy Price Development

Figure 1 shows the evolution of residential energy and distribution prices excluding taxes between January 2009 and May 2022 in 15 European capital cities. The index is calculated by weighing prices in each of the capital cities by the respective national electricity or gas residential consumption.

Residential electricity prices steadily decreased over the first half of 2009 and reached a trough at 96 index points in June 2009 as the economic crisis took its toll on demand and wholesale prices plummeted. Prices started to recover in the second half of 2009 together with (temporary) green shoots in economic activity and a general feeling that the worst of the crisis was behind us. They have been on an upward trend since then. The index for electricity reached as high as 116 index points in October 2014. Since then, it faltered and remained around 108 index points in 2016 and 2017. During 2019, the index was fluctuating around 115 and 119 points. However, the recent developments on the wholesale markets due to COVID-19 restrictions dropped the index rate down to 112 points in 2020. During 2021, the index followed an increasing trend as people and businesses were resuming their activities, hence there was higher demand, and the energy crisis was gradually developing. The extraordinary weather conditions, the record high wholesale natural gas prices and the lack of storage materials to cover demand led to repetitive record high prices in most of the European capitals by the end of 2021. The increasing trend became more extreme during the second half of the year, reaching 170 points in December 2021. After climbing the sharpest step in its historical data in January 2022, the HEPI electricity index currently stands at 224 points (EUR-15).

The economic downturn which impacted energy demand and wholesale prices in 2009 is much more visible in the development of residential gas prices. The gas price index dropped significantly in 2009 and reached its lowest value only in February 2010 at 81 index points (nine months after the lowest value in the electricity price index). Retail prices started to recover in the winter of 2010 when a cold wave hit many parts of Europe. The index steadily increased until the beginning of 2013. It remained between 105 and 110 index points ever since despite a significant drop in natural gas prices on international markets during the year 2015. In 2016 however, gas prices plummeted reaching a 6-year low in September 2016 at 93 points. After a small hike up to 95 points in March 2017, a bigger one followed to 103 points in November 2018. There was a decreasing trend for two years, up until the gas price index started increasing, surpassing November 2018 levels for the first time in August 2021. The ongoing energy crisis greatly affected the gas price index, which was almost doubled within 2021, going from 87 points in January 2021 to 164 points in December 2021. It currently stands at 241 index points.

When examining the averages of the end-user prices for both electricity and gas, the following changes can be observed; from a year ago, May 2021, the electricity bills in all EU capitals have increased by 43% while the gas bills have increased by a staggering 88%.

Figure 1: Evolution of residential energy and distribution prices excluding taxes in the EUR-15

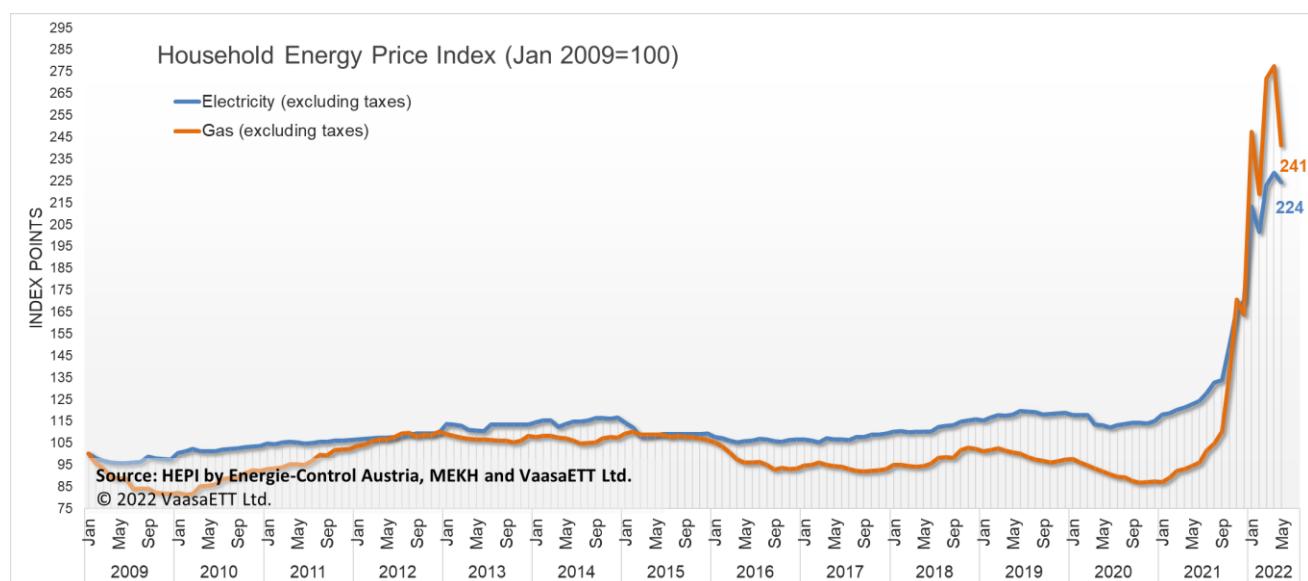
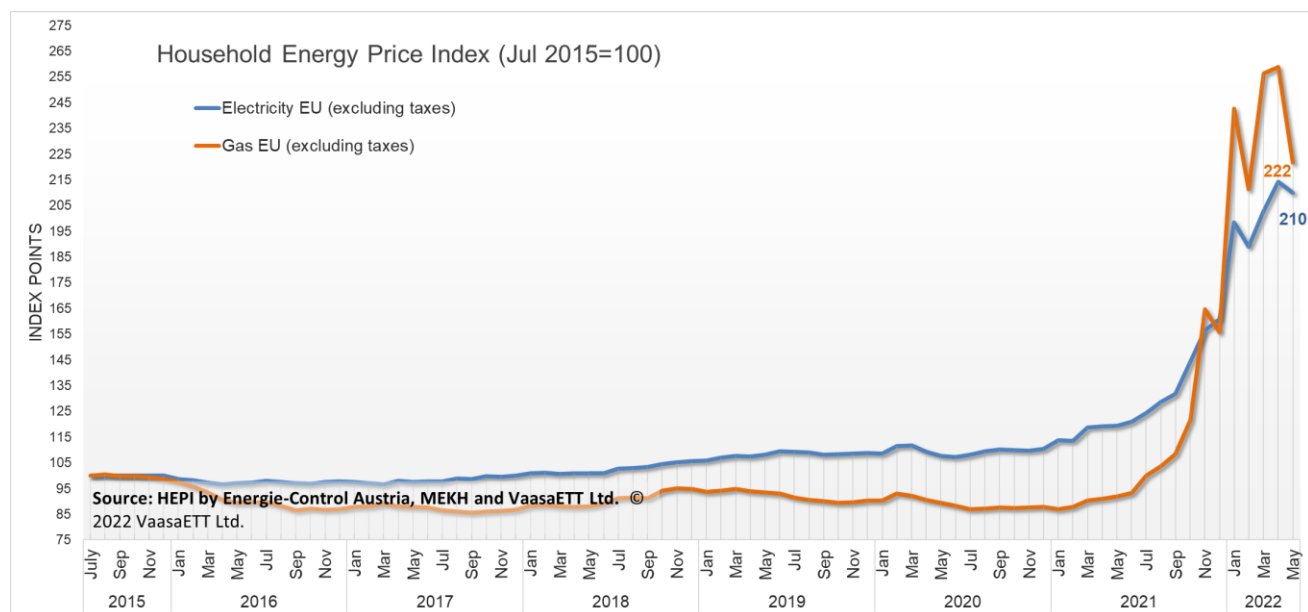


Figure 2: Evolution of residential energy and distribution prices excluding taxes in the EU¹



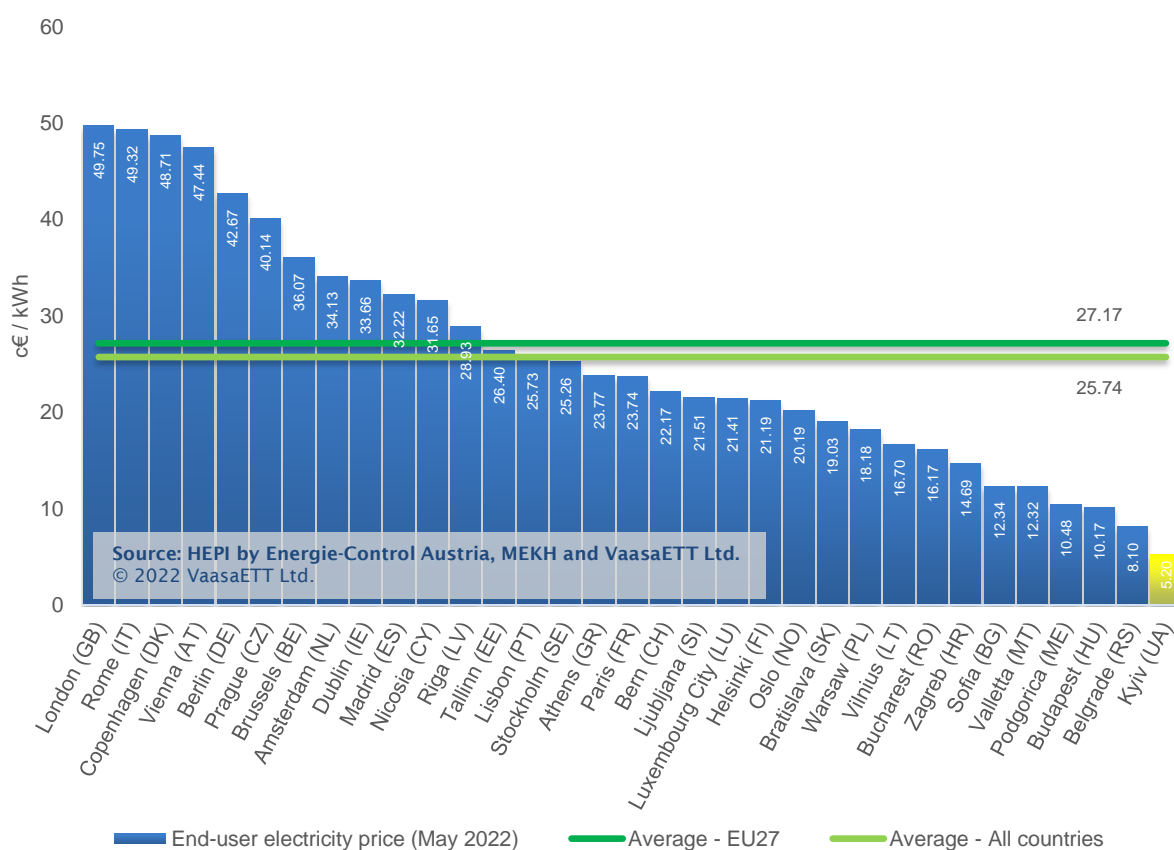
¹ EU-28 values were used between July 2015 - January 2020. EU-27 values are used from February 2020 onwards.

Residential Electricity Prices

Figure 3 shows the end-user price of electricity in the 33 European capital cities as of May 2nd, 2022. It shows that depending on where a customer lives in Europe, the price that a customer pays can vary by a ratio of over 6. If we include Kyiv, the price varies by a ratio of almost 10. London and Rome are by far the most expensive cities for household customers in Europe, followed by Copenhagen, Vienna and Berlin.

Kyiv¹ appears to have the least expensive electricity price, followed by Belgrade, Budapest and Podgorica. In nominal terms, prices in the capital cities of Central and Eastern Europe (CEE) tend to be lower than average; Prague and Riga are the only capital cities among the CEE countries in which the price of electricity is above the European average.

Figure 3: Residential electricity prices including taxes



¹ As long as the Ukrainian crisis continues, the price of Kyiv will be kept stable and will be represented in different colour in the HEPI graphs.

The most significant changes that took place in the electricity market this month were as follows²:

- A 29% price increase in Ljubljana, due to an increase in the energy component;
- A 26% price increase in Riga, due to increases in the energy taxes and distribution components (following the end of the compensation measures);
- An 18% price increase in Dublin;
- A 13% price increase in Athens, due to increases in the energy and energy taxes components;
- A 6% price increase in Prague, due to an increase in the energy component;
- A 3% price increase in Rome, due to an increase in the energy component;
- A 2% price increase in London;
- A 2% price increase in Nicosia, due to an increase in the energy component;
- A 2% price increase in Oslo, due to an increase in the distribution component;
- A 1% price increase in Berlin, due to an increase in the energy component;
- A 25% price decrease in Amsterdam, due to a decrease in the energy component;
- An 18% price decrease in Brussels, due to a decrease in the energy component;
- A 10% price decrease in Copenhagen, due to a decrease in the energy component;
- An 8% price decrease in Stockholm, due to a decrease in the energy component;
- A 5% price decrease in Madrid, due decreases in the energy and energy taxes components;
- A 5% price decrease in Tallinn, due to a decrease in the energy component;
- A 3% price decrease in Vienna, due to decreases in the energy and energy taxes components;
- A 2% price decrease in Paris, due to a decrease in the energy component;
- A 1% price decrease in Helsinki, due to a decrease in the energy component.

Residential electricity prices in May show a slight decrease in general, after the upward trend of the last couple of months. Some of the cities studied (namely Dublin, Ljubljana, Nicosia, Oslo, Prague, Riga and Rome) reached new record-highs, while others saw a decrease in electricity prices, mainly due to the extensive measures that have been applied by the European governments to mitigate the impact of the energy crisis on household bills. Nevertheless, the prices remain significantly high compared to the ones a year ago, which can be attributed to a combination of factors, such as increased demand connected to post-pandemic economic recovery and extraordinary weather conditions, the record-high prices for natural gas combined with low-level gas storages, and high CO2 emissions allowances. High energy prices have been further affected by the Russian invasion of Ukraine in late February 2022 and the subsequent uncertainty over energy security.

² The change in each capital city is calculated using the prices in their local currency to exclude the impact of exchange rate fluctuations.

In Ljubljana, suppliers increased their electricity prices in May³ amid their expiring long-term power contracts, bought in advance in much lower prices compared to what they are forced to buy nowadays. According to sources⁴, prices in Slovenia are expected to rise further during the second half of the year. In Riga, the compensation for the electricity distribution charges and procurement components (OIK) provided by the Latvian government expired at the end of April, resulting in higher electricity bills for households⁵ in May. Similarly in Athens, a decrease in the support subsidies has led to a 13% price increase in May, after two consecutive declining months.

In Dublin, Electric Ireland increased electricity and gas rates for its customers, from May 1st. The decision follows the international developments in oil and gas markets, resulting in higher energy bills for households⁶. Other Irish suppliers⁷, such as SSE Airtricity, also announced increases in energy rates starting from May 1st. As a result, electricity end-user price rose this month by 18% despite the VAT cut⁸ from 13.5% to 9%, that has been decided by the government in May (until end of October) to offset rising prices and a scheduled increase in the carbon tax.

Finally, this month, a price decrease has been noticed for electricity customers in Amsterdam and Brussels, following extreme increases during the previous couple of months. Yet, the level of prices is significantly higher than a year ago.

When adjusted to purchasing power standards (PPS) in each country, the picture changes dramatically. PPS is an artificial common reference currency that eliminates general price level differences between countries⁹. When expressed in PPS, energy prices are thus shown in relation to the cost of other goods and services. The lowest adjusted household electricity prices are found in Oslo, Bern, Valletta and Belgrade, while the highest are currently in Prague, Rome and Vienna. Half of CEE countries end up with electricity prices which are relatively low compared to the general level of prices in the country and below the European average (Figure 4); Bucharest, Prague, Riga, Tallinn and Warsaw are the capital cities among the CEE countries in which the price of electricity is above the European average.

³ Novice: "[Konec zmernih cen, položnice za električno ponovno enormne](#)", 24.05.2022

⁴ Balkan News: "[Slovenia expects electricity price hike in Q3 2022](#)", 18.05.2022

⁵ ENG.LSM.lv: "[Energy aid comes to an end in Latvia](#)", 03.05.2022

⁶ Irish Times: "[Electric Ireland prices to rise 23-25% from May](#)", 30.03.2022

⁷ The Journal: "[Cost of living: Price rises on electricity and gas to kick in from today](#)", 01.05.2022

⁸ The Irish Times: "[Cut in VAT on gas and electricity bills announced](#)", 13.04.2022

⁹ Eurostat: [Purchasing power parities - Overview](#)

Iberian exception: Spain and Portugal capping gas cost for power

In April, Spain and Portugal reached a political agreement with the European Commission to place a price cap on natural gas used in power plants, allowing a decoupling between electricity and gas prices. The mechanism, proposed to tackle soaring electricity bills and inflation, will only be temporary, effective for the next 12 months. The price cap will be 40 €/MWh during the first weeks, while it will average out at 50 €/MWh over the 12 months of implementation. It is anticipated that the implementation of the mechanism will half the electricity bills for approximately 40% of Spanish and Portuguese consumers on the regulated market.

The approval of “Iberian exception” was granted, given that Spain and Portugal have high levels of renewable energy generation and very limited interconnection to the rest of Europe (only 2.8%), practically rendering the peninsula an “energy island”. According to the agreement, the electricity prices for consumers in the peninsula and continental exchanges (via France) will be the same.

More countries (e.g. Belgium, Greece) have shown interest in applying similar mechanisms to mitigate the impact of soaring gas prices on retail electricity consumers.

Author: **Maria Kotofolou**, Energy Market Analyst

Sources:

- [1] Euronews: “[Brussels agrees to 'Iberian exception' allowing Spain and Portugal to cap electricity prices](#)”, 26.04.2022
- [2] ELPAIS: “[España y Portugal pactan con Bruselas su plan para bajar la factura de la luz](#)”, 26.04.2022
- [3] ELMUNDO: “[España y Portugal anuncian un acuerdo con Bruselas para abaratar el precio de la luz](#)”, 26.04.2022
- [4] Euronews: “[Belgium takes up baton to seek gas price cap](#)”, 21.03.2022
- [5] Reuters: “[Greece gets EU's initial nod to cap power prices -minister](#)”, 23.05.2022

Figure 4: Residential electricity prices including taxes at PPS

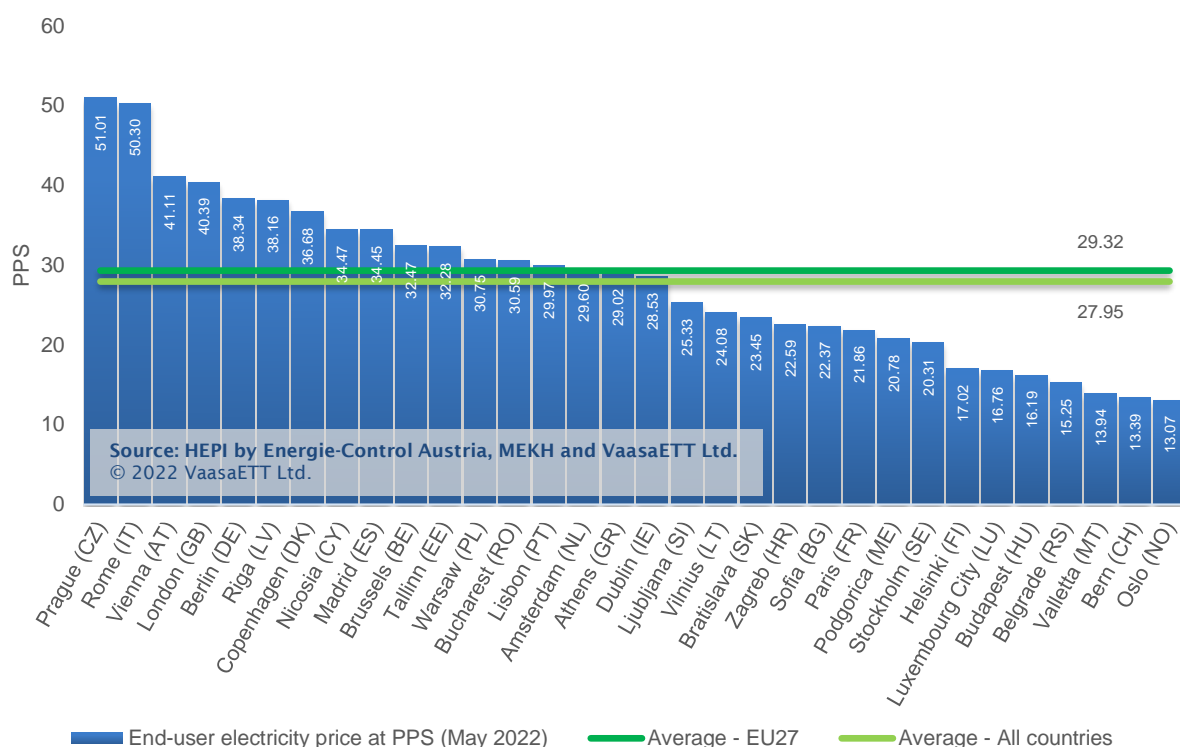
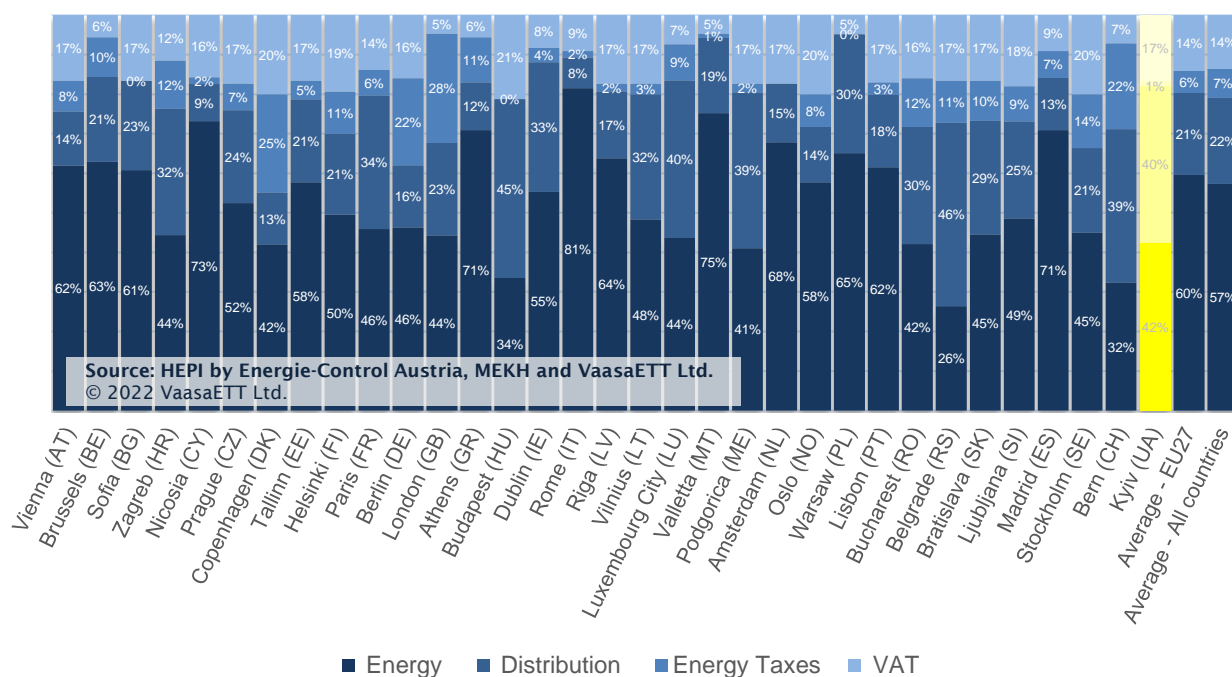


Figure 5: Residential electricity price breakdown¹⁰



¹⁰ Please note that proportions appearing in the graph are rounded, and due to this may not add up to 100%. Additionally, please note that for Amsterdam, NL, the typical household considered in HEPI research receives a tax refund on their energy tax. When considering this, the end-consumer's bill breakdown is as follows: Energy component 112%, distribution 24%, energy taxes -53%, and VAT 17%.

Figure 5 shows the breakdown of the electricity price in the 33 analysed capitals, into energy, distribution, energy taxes¹¹ and VAT. Our survey shows that on average, energy (the contestable component of the price) represents 60% of the end-user price of electricity bill, distribution 21%, energy taxes 6% and VAT 14% for the European capitals.

If we focus on the cost of energy as a commodity, in Belgrade it currently represents just 26% of the end-user electricity price, which is the lowest among all surveyed cities. On the contrary, Rome has the greatest energy percentage, reaching 81% of the end-user price in May 2022.

Additionally, starting from January 2020, a typical consumer in Amsterdam pays zero energy tax due to the increased amount of tax credit, which exceeds the indicated energy tax amount. On the contrary, they receive a refund on the exceeding tax credit amount. The aim of this refund is to encourage consumers towards electrification and switching away from gas heating and appliances.

Residential Gas Prices

Figure 6 shows the price of natural gas paid typically by residential customers in 28 European capital cities as of May 2nd, 2022¹². The highest price is paid by inhabitants of Amsterdam who pay over 2 times the European average end-user price and almost 1.2 times as much as the inhabitants of the second most expensive city, Stockholm. This can be explained by the nature of the Swedish gas market; the small size of only 95,000 household gas customers in the whole of Sweden of which 61,000 in the isolated gas network in Stockholm¹³. Copenhagen is currently the third most expensive capital.

The prices in Amsterdam are almost 10 times as high as in Budapest, which is the cheapest city for gas in EU, and over 11 times as high if we include Kyiv¹⁴. Even more pronounced than for electricity, household natural gas is usually cheaper in the CEE countries.

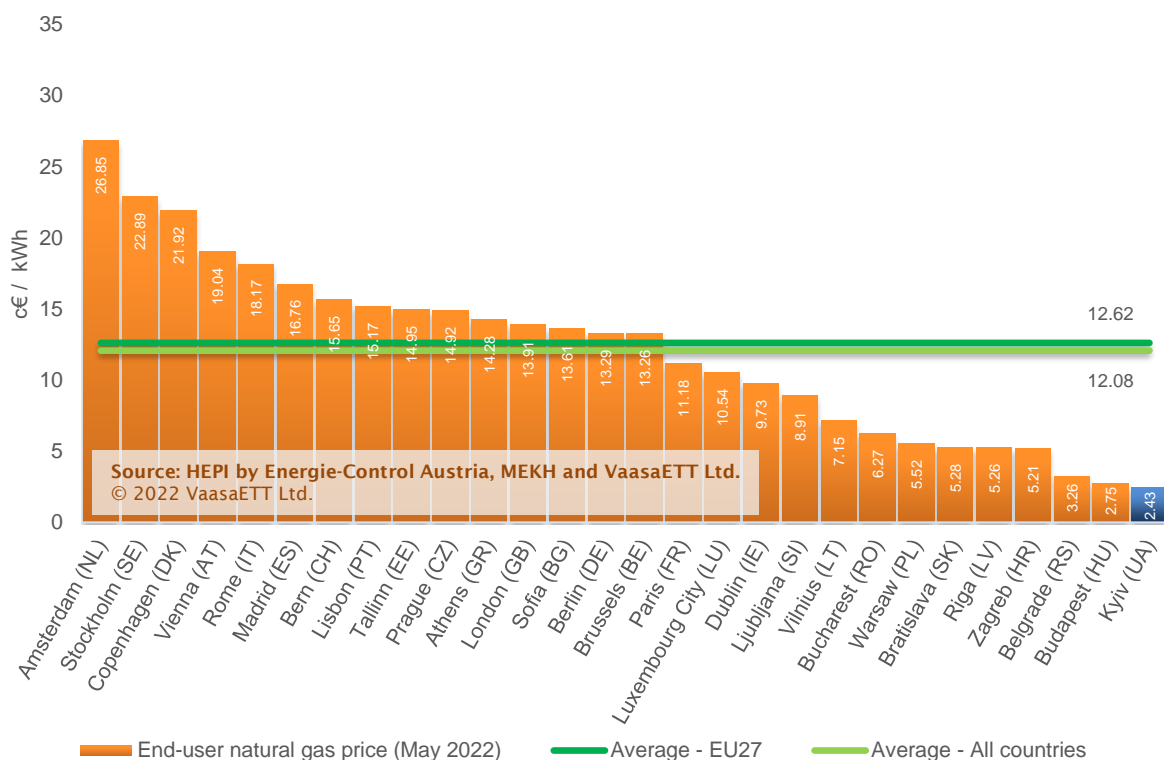
¹¹ Energy taxes component is the sum of all the taxes, fees and levies.

¹² Please note that Helsinki, Nicosia, Oslo, Podgorica and Valletta have been left out of this analysis on gas prices as there is virtually no residential gas market in these cities.

¹³ The Swedish electricity and natural gas market 2019 Ei (Ei R2020:07).

¹⁴ As long as the Ukrainian crisis continues, the price of Kyiv will be kept stable and will be represented in different colour in the HEPI graphs.

Figure 6: Residential gas prices including taxes



The most significant changes that took place in the natural gas market this month were as follows ¹⁵:

- A 67% price increase in Lisbon, due to increases in the energy and energy taxes components;
- A 27% price increase in Dublin;
- A 26% price increase in Prague, due to an increase in the energy component;
- A 20% price increase in Madrid;
- A 10% price increase in Sofia, due to an increase in the energy component;
- An 8% price increase in Athens, due to increases in the energy and energy taxes components;
- A 4% price increase in Copenhagen, due to an increase in the energy component;
- A 2% price increase in Riga and Tallinn, due to increases in their energy components;
- A 34% price decrease in Berlin, due to a decrease in the energy component;
- A 22% price decrease in Vienna, due to decreases in the energy and energy taxes components;
- An 18% price decrease in Brussels, due to a decrease in the energy component;
- A 13% price decrease in Amsterdam, due to a decrease in the energy component;

¹⁵ The change in each capital city is calculated using the prices in their local currency to exclude the impact of exchange rate fluctuations.

- A 5% price decrease in London;
- A 3% price decrease in Bern, due to a decrease in the energy component;
- A 2% price decrease in Paris, due to a decrease in the energy component.

An overall slight decrease is observed in the residential gas prices this month across Europe, following a general increase observed during the last couple of months. Athens, Copenhagen, Dublin, Lisbon, Madrid, Prague, Rome, Sofia and Tallinn reached new record-highs, while gas prices declined in some of the cities studied, as a result of several government interventions adopted to stop the price spike. However, the current prices remain incredibly high compared to the ones a year ago. The high retail gas prices reflect the extremely high wholesale prices driven by the increased natural gas demand and the low levels of storage, while the Russian invasion of Ukraine impacted the markets further.

In Portugal, suppliers¹⁶ have been increasing the energy rates, following the turbulent situation of the international energy markets. Galp raised the gas tariffs for household customers up to 3 euros as of April 15th, followed by another major supplier EDP commercial, which also announced increases in May due to “adjustment in charges to the regulated market”, according to the company. Similarly in Ireland, the increase of gas rates by Electric Ireland and SSE Airtricity also drove household bills up⁶, despite the VAT cut to 9% in May, which was however offset by the increase in the carbon tax.

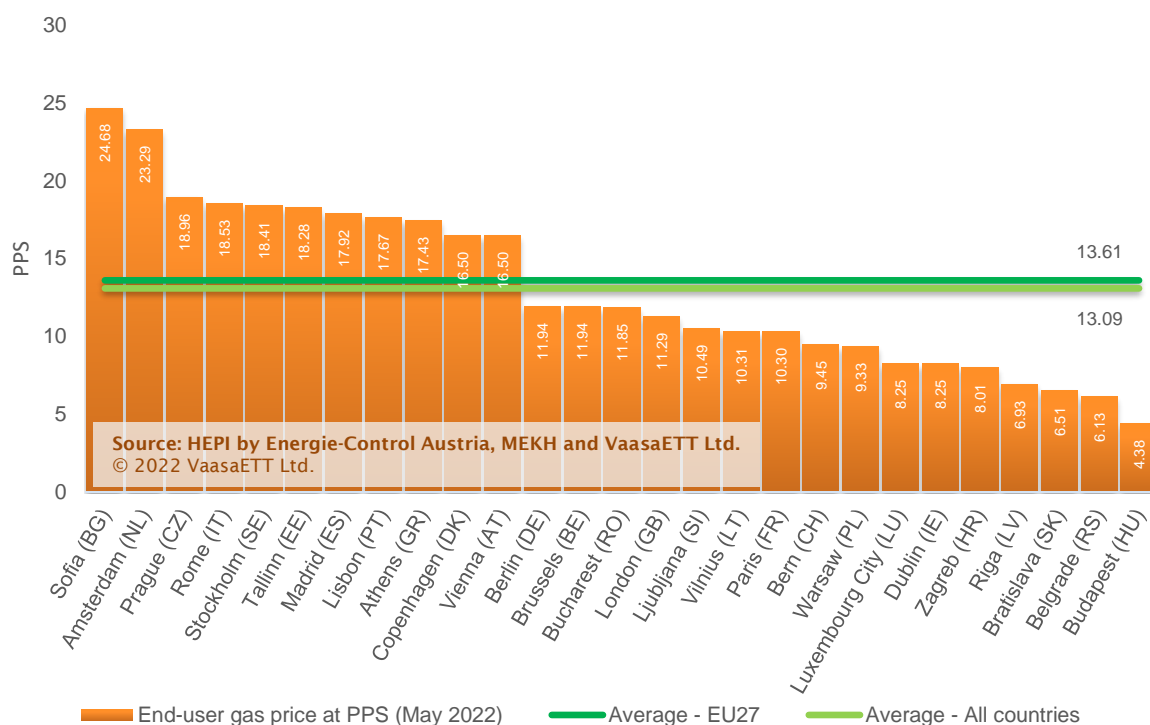
Bulgaria is one of the European markets that natural gas supplies from Russia has been cut, leading to a 10% increase in the end-user price, in May. Due to the recent development, the government which is working on a “long-term support mechanism” reports that it has agreed alternative gas supply from neighbouring Greece and also planning on a deal with Azerbaijan¹⁷.

Finally, Berlin, Brussels and Vienna saw gas prices decreasing significantly after the extreme prices of previous months. However, the current prices remain significantly higher than the ones a year ago.

¹⁶ Essential Business: “[Galp’s domestic customers faced higher gas prices from 15 April.](#)”, 18.04.2022

¹⁷ Euronews: “[Bulgarian government approves plan to support companies from high energy prices](#)”, 16.05.2022

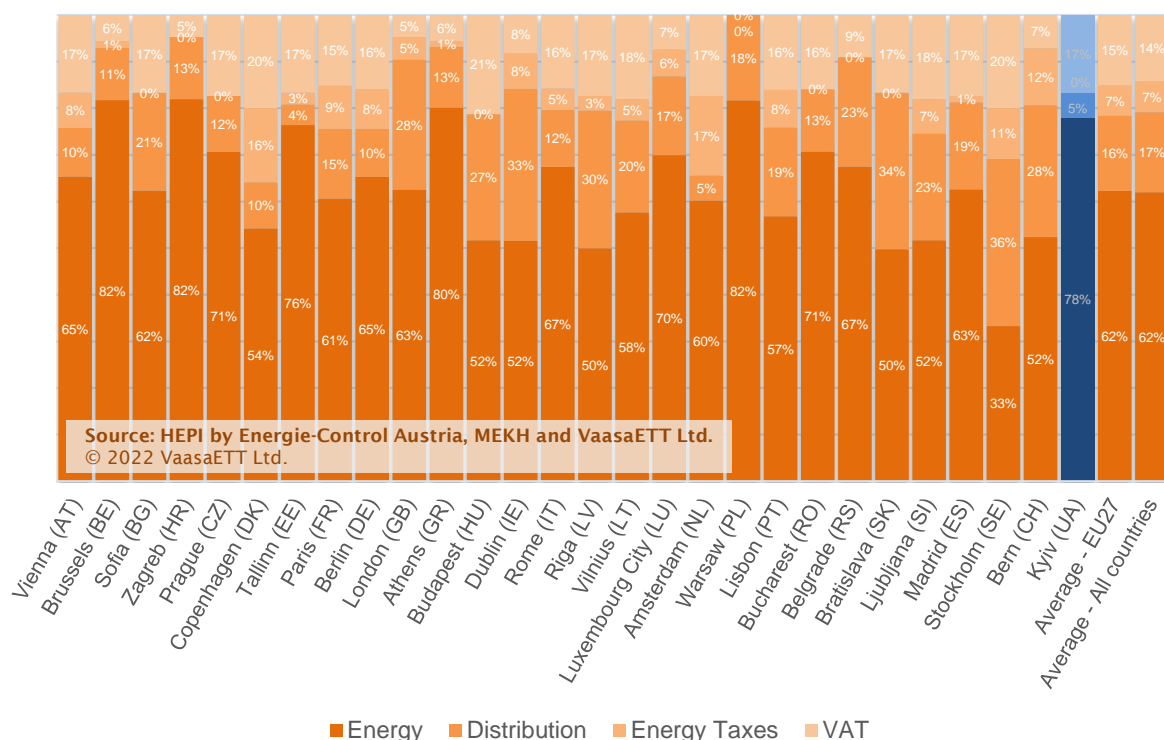
Figure 7: Residential gas prices including taxes at PPS



In the same vein as for electricity, gas prices at PPS offer a very different outcome from the actual prices. This month, Budapest, Belgrade and Bratislava were the cheapest cities when adjusted to PPS (Figure 7).

Our survey shows that on average, energy (the contestable component of the price) represents 62% of the end-user price of natural gas, distribution 16%, energy taxes 7% and VAT 15% for the European capitals. In the Netherlands, energy taxes are used for nudging the consumers' behaviour and energy use. Even more so starting from January 2020, the energy tax for residential natural gas user is typically 17%. The aim is to encourage the use of electric heating and appliances instead of gas.

Figure 8: Residential gas price breakdown¹⁸



Overall, results show that market forces represent about 60% of the end-user price both for electricity and gas, whereas national fiscal and regulatory elements are responsible for the remaining 40% through distribution tariffs, energy taxes and VAT. The current energy crisis has led to significant increase of the average energy component in EU capitals which used to represent about 40% of the end-user price a year back, in May 2021.

In places where the energy component is lower, so is the incentive for customers to look for more competitive offers¹⁹. Similarly, the sharp increase of energy prices drives customers to seek for more competitive offers in the market. To their disappointment, since the energy crisis started, the number of competitive offer alternatives has significantly decreased²⁰, especially for new customers.

¹⁸ Please note that proportions appearing in the graph are rounded, and due to this may not add up to 100%

¹⁹ Latest utility customer switching data can be accessed in the most recent version of Capgemini's [World Energy Markets Observatory](#), created with partnership with VaasaETT, De Pardieu Brocas Maffei and Enerdata. VaasaETT contributes with data on the retail markets sections.

²⁰ VaasaETT: "[European retail energy prices reach record levels](#)", 20.12.2021

HEPI Data Attributes

All prices and other statistics relate to:

- The prices being offered to customers actively searching for an offer at the time of data collection
- The first day of the month
- Residential customers with a typical consumption for the national capital city
- Standing fees are added to the price per kWh so that the entire end-user cost is taken into account.
- In case of spot-based tariffs the previous month's average price is considered in the calculations to smooth day-to-day extreme changes

HEPI prices do not relate to:

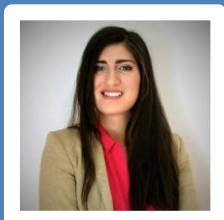
- The prices paid by customers on fixed price contracts agreed prior to the time of data collection
- The price paid by customers on tariff contracts set at a level no longer available at the time of data collection
- Sign in and other temporary bonuses and other forms of non-monetary benefits are not taken into account since they can distort the overall tariff offered, especially in cases where they are offered on a "one-off" basis
- Contracts with extra services (e.g. insurance, maintenance, etc.) and prepaid contracts are also omitted from the analysis.

Note on retrospective price adjustments:

In cases of retrospective adjustments to previous months' price (i.e. application of support measures or review of regulated price where applicable) changes are integrated retrospectively in the prices of the month(s) for which the adjustments apply. This might create a difference between the HEPI price and the actual bill amount for a given month.

Visit our project webpage at <http://www.energypriceindex.com> and subscribe to the free monthly update of the HEPI index for Europe.

For More Information

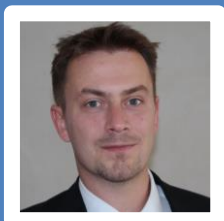


Rafaila Grigoriou

HEPI Project Manager

Office: +30 6980 036815

Email: rafaila.grigoriou@vaasaett.com (English / Greek)

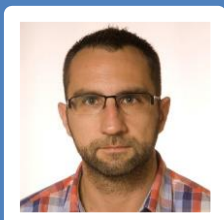


Markus Lechner

Regulation and Competition

Office: +43 (1) 24724 715

Email: markus.lechner@e-control.at (English / German)



János Palicska

Analyst, Department of Analysis and Modelling

Office: + 36 1 459 7809

Email: palicskaj@mekh.hu (English / Hungarian)

About the Authors



Energie-Control Austria

Energie-Control Austria was set up by the legislator on the basis of the new Energy Liberalisation Act and commenced operation on 1 March 2001. Energie-Control is headed by Mr. Wolfgang Urbantschitsch and Mr. Andreas Eigenbauer as managing directors and is entrusted with monitoring, supporting and, where necessary, regulating the implementation of the liberalisation of the Austrian electricity and natural gas markets.

More at: www.e-control.at



The Hungarian Energy and Public Utility Regulatory Authority

The main responsibilities of the Hungarian Energy and Public Utility Regulatory Authority are consumer protection, providing regulated access to networks and systems, carrying out regulatory competencies in order to maintain security of supply and fostering competition. The scope of the infrastructures, which have to be overseen by the Hungarian Energy and Public Utility Regulatory Authority, has been extended in 2011 with the complete regulation of district heating and in 2012 with the water public utilities. As market progresses are becoming more widespread, we put emphasis on our market monitoring task and we pay specific attention to regional market integration both in electricity and natural gas. **More at:** www.mekh.hu



VaasaETT

VaasaETT is a research and advisory consultancy dedicated to customer related issues in the energy industry. VaasaETT advises its clients based on empirical evidence brought about from extensive research in the area of customer behaviour and competitive market behaviour (including smart energy offerings, demand response, energy efficiency, smart home, smart grid). VaasaETT's unique collaborative approach enables it to draw on an extensive network of several thousand energy practitioners around the world who can contribute to its research activities or take part in industry events it organises allowing VaasaETT to integrate global knowledge and global best practice into its areas of expertise. VaasaETT's truly global focus is reflected by research and strategic support having been provided to a diverse array of organisations on 5 continents including for instance 28 of the Fortune Global 500 companies, the European Commission, Government and public research bodies in Europe, Japan, the UAE, the Middle East and Australia. **More at:** www.vaasaett.com