

Household Energy Price Index for Europe

APRIL 1, 2024

March 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

Electricity price increases in
Madrid and Nicosia

Electricity price decreases in
Amsterdam, Athens, Brussels,
Copenhagen, Dublin, Helsinki,
London, Oslo, Rome,
Stockholm and Vilnius

No natural gas price increases
were observed this month

Natural gas price decreases in
Athens, Berlin, Brussels,
Dublin, London, Paris, Prague,
Riga, Rome, Sofia, Tallin and
Vienna

Fixed vs variable tariff
analysis: fixed and variable
prices are now at the same
level

European Energy Price Development

Figure 1 shows the evolution of residential energy and distribution prices excluding taxes between January 2009 and March 2024 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 164 points in December 2021. After climbing the sharpest step in its historical data in January 2022 and its largest peak in October 2022, the HEPI electricity index has followed a decreasing trend and it currently stands at 190 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 96 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 163 points in November 2021. Since then, its

value was doubled again in November 2022, reaching 350 points; it currently stands at 162 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, March 2023, the electricity bills in all EU capitals have decreased by 11% while the gas bills have decreased by 16%.

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

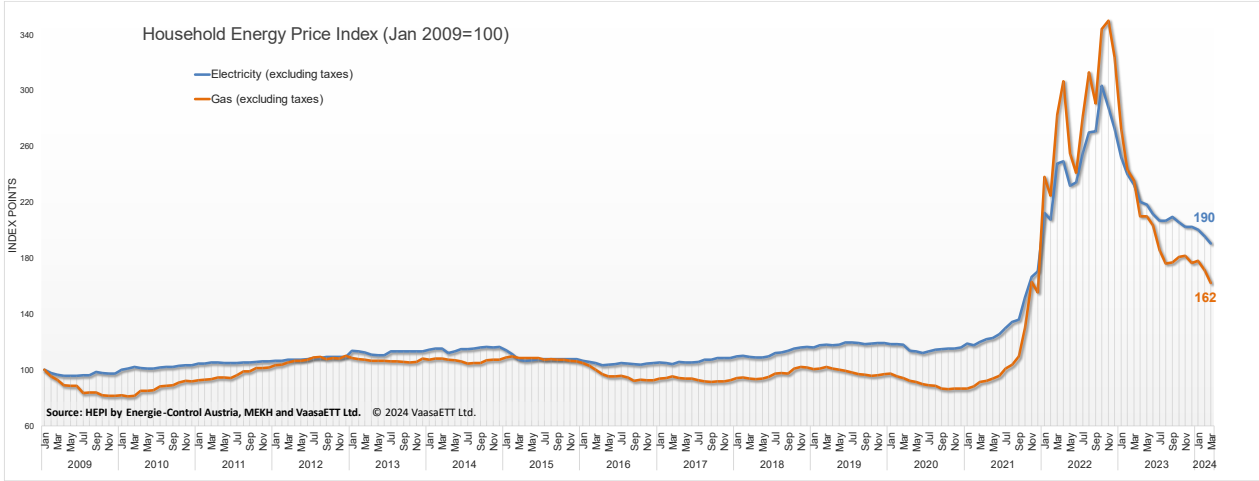
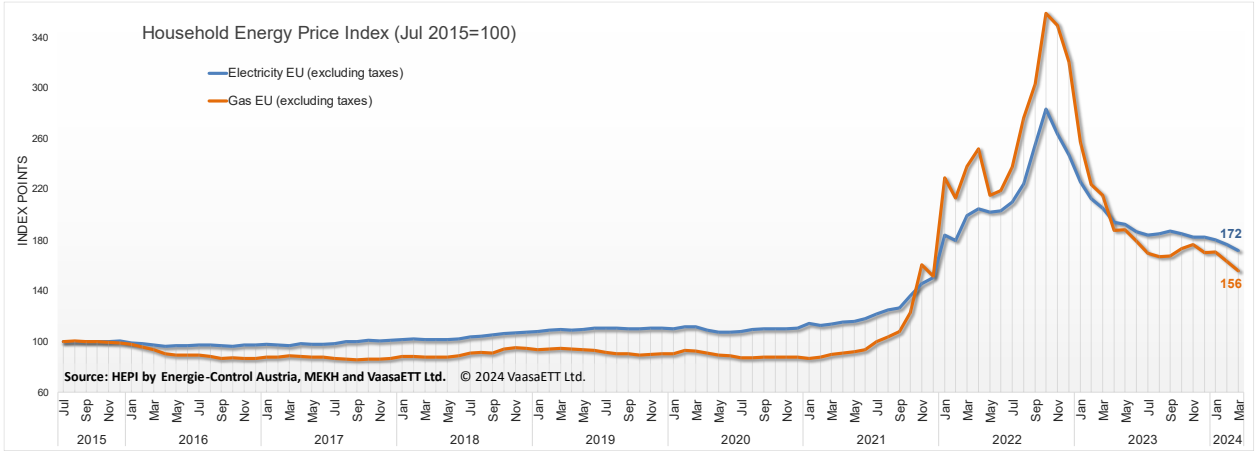


Figure 2: Evolution of residential energy and distribution prices excluding taxes in the EU¹



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

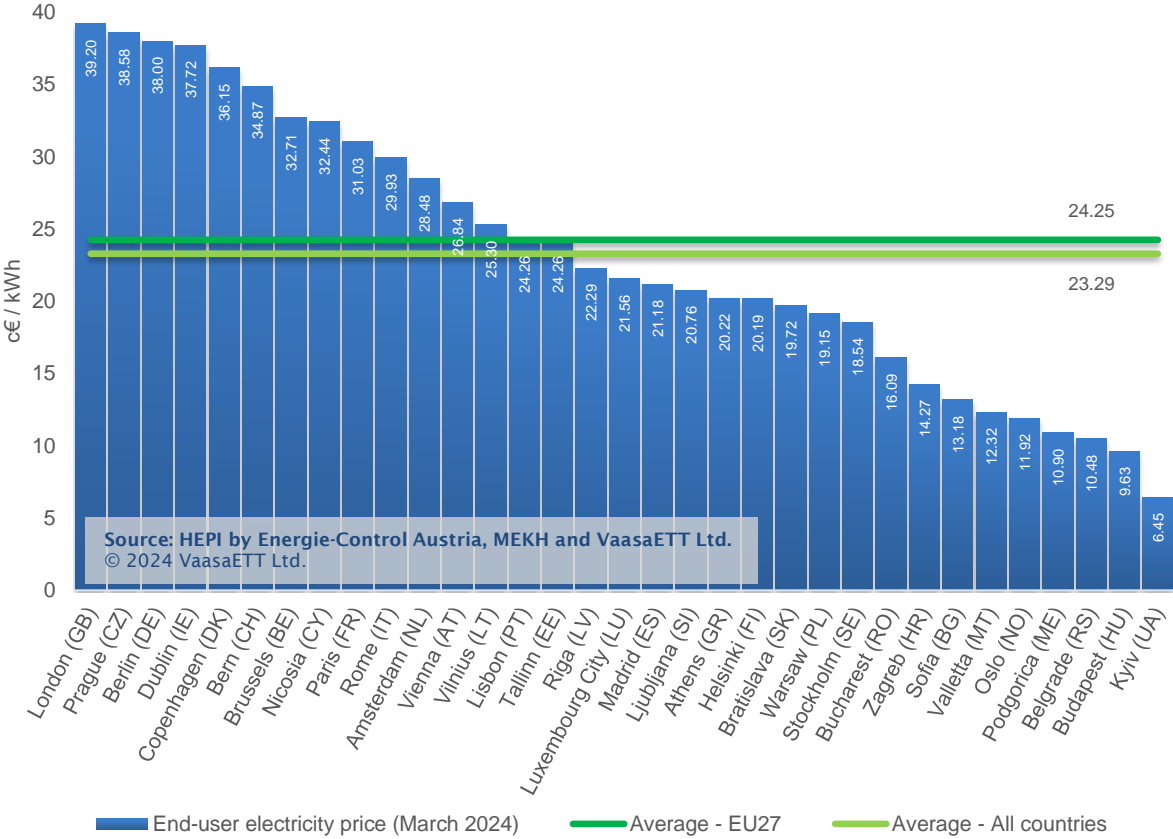
Residential Electricity Prices

Figure 3 shows the end-user price of electricity in the 33 European capital cities as of March 1st, 2024. It shows that depending on where a customer lives in Europe, the electricity price can vary by a ratio

of over 6. London and Prague are the most expensive cities for household customers in Europe, followed by Berlin, Dublin and Copenhagen.

Kyiv appears to have the least expensive electricity price, followed by Budapest, Belgrade and Podgorica. In nominal terms, prices in the capital cities of Central and Eastern Europe (CEE) tend to be lower than average; Prague, Tallin and Vilnius 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



The most significant changes that took place in the electricity market this month were as follows¹:

- A 9% price increase in Nicosia, due to increases in the energy, distribution and VAT components, following the end of the subsidy scheme;
- A 4% price increase in Madrid, due to an increase in the VAT component;
- A 12% price decrease in Athens, due to decreases in the energy, distribution and distribution taxes components;

¹ The change in each capital city is calculated using the prices in their local currency to exclude the impact of exchange rate fluctuations.

- A 9% price decrease in Dublin, Helsinki and Vilnius, due to decreases in their energy components;
- A 7% price decrease in Stockholm, due to a decrease in the energy component;
- A 6% price decrease in Oslo, due to a decrease in the energy component;
- A 5% price decrease in Brussels, due to a decrease in the energy component;
- A 4% price decrease in Copenhagen and Rome, due to decreases in their energy components;
- A 3% price decrease in Amsterdam, due to a decrease in the energy component;
- A 2% price decrease in London, due to a decrease in the energy component.

The average European electricity end-user price marked a 2% decrease in March and currently stands 9% lower compared to that of last year, depicting the downward trend that is observed in the European wholesale markets, lately. From the 33 capital cities under examination, 14 experienced price decreases, while the majority showed no variation. Only 2 capitals showed price increases, specifically Nicosia and Madrid, both related to changes in support measures.

The largest price increase in electricity end-user price, observed in Nicosia (9%), is due to the termination of the electricity cost subsidy. The scheme was enforced by the government in November 2023 as part of a package of measures which aimed at alleviating consumers from inflationary pressures².

In Spain, the VAT was reduced since the summer of 2021 as a temporary support measure during the energy crisis. The measure has been updated and extended several times during this period and was recently set at 10%, at the beginning of 2024. The reduced VAT applies under the condition that the wholesale price of electricity remains above 45 €/MWh on average per month. In February, the average wholesale price dropped below this threshold, thus resulting to the return of the VAT to its pre-crisis value of 21%. Subsequently, the electricity end-user price in Madrid increased by 4% in March, despite an 8% reduction in the energy component. However, the measure remains active until the end of the year and should the monthly wholesale price rise above the limit, VAT on electricity will return to 10% for end customers³.

On the contrary, the biggest decrease in March was observed in Athens (-12%), following a significant drop in the wholesale market during the previous month. Furthermore, the new market scheme that

² Υπουργείο Οικονομικών: "[Πακέτο Μέτρων Αντιμετώπισης των Πληθωριστικών Πιέσεων](#)", 06.11.2023

³ El Confidencial: "[El IVA de la luz subirá al 21% desde el viernes tras descartar el Gobierno mantener la rebaja](#)", 27.02.2024

came into effect at the beginning of the year⁴ seems to have increased competition among suppliers, especially when it comes to the special (green) tariff⁵.

Decreases in the electricity end-user price were also notable in the Nordics. Spot-based contracts are linked to Nordpool wholesale prices that followed a downward trend, resulting in a decrease of 9% in Helsinki, 7% in Stockholm, 6% in Oslo and 4% in Copenhagen.

Similar is the case for the Baltics, where the wholesale price drop is mostly depicted in Vilnius with a 9% end-user price decrease. Prices in Lithuania are expected to fall further in April, due to lower regulated network charges which have been already announced by the State Energy Regulatory Council (VERT)⁶.

In Dublin, the downward trend in electricity prices continues this month, leading to a 9% decrease, after the main suppliers implemented new price cuts⁷. Consumers are also expected to receive the final instalment of the 450€ electricity credit, that was announced in October of 2023, until the 30th of April. Despite the consecutive price drops, the electricity price remains significantly higher compared to pre-crisis levels, if the electricity credit is not taken into consideration, while it stands at the higher end of European energy prices.

Lastly, the 5% decrease in the electricity end-user price in Brussels is attributed to the general stability of the European markets and the record-high temperatures recorded in the country during the past month⁸.

In an effort to shield consumers from continuous soaring energy prices, European governments have adopted multiple measures during the energy crisis, which are incorporated in the prices shown in the HEPI methodology. Nevertheless, in some cases occasional or seasonal energy schemes are introduced to end users as one-time refunds and compensations, that in fact correspond to a longer period of consecutive high prices. The impact of such measures is compared separately, in Figure 4.

In Ireland⁹, residential consumers are eligible for a €450 credit, applied in 3 instalments of €150, starting from December 2023. The first credit concerns the period between 1 December and 31

⁴ HEPI: "[Initiatives in the Greek electricity market target transparency and consumer awareness](#)", 05.02.2024

⁵ Ημερήσια: "[Λογαριασμοί ρεύματος: Στα 0,10€/KWh βούτηξε η μέση τιμή τον Μάρτιο - Όλα τα νέα πράσινα τιμολόγια με μειωμένες τιμές](#)", 02.03.2024

⁶ BNS: "[VERT pakoregavo AB „ESO“ gaminančių buitinių vartotojų naudojimosi elektros tinklais paslaugų kainas](#)", 28.02.2024

⁷ Irish Examiner: "[Irish households to see energy bills fall as price cuts take effect from Friday](#)", 29.02.2024.

⁸ Testachats: "[Les prix de l'énergie baissent en mars pour le quatrième mois consécutif : opter pour un tarif fixe ?](#)", 12.03.2024

⁹ Citizens Information: [Electricity Account Credit \(citizensinformation.ie\)](#)

December 2023, the second between 1 January and 29 February 2024 and the third between 1 March and 30 April 2024. The credit will be transferred directly through suppliers to their customers' electricity bills. Assuming a typical electricity customer in Dublin, for the third month of 2024, the compensation reaches 57% of the monthly electricity cost, resulting in a monthly electricity price of €16.29 cents/kWh.

Figure 4: Comparison of electricity end-user price with and without energy refund incorporated

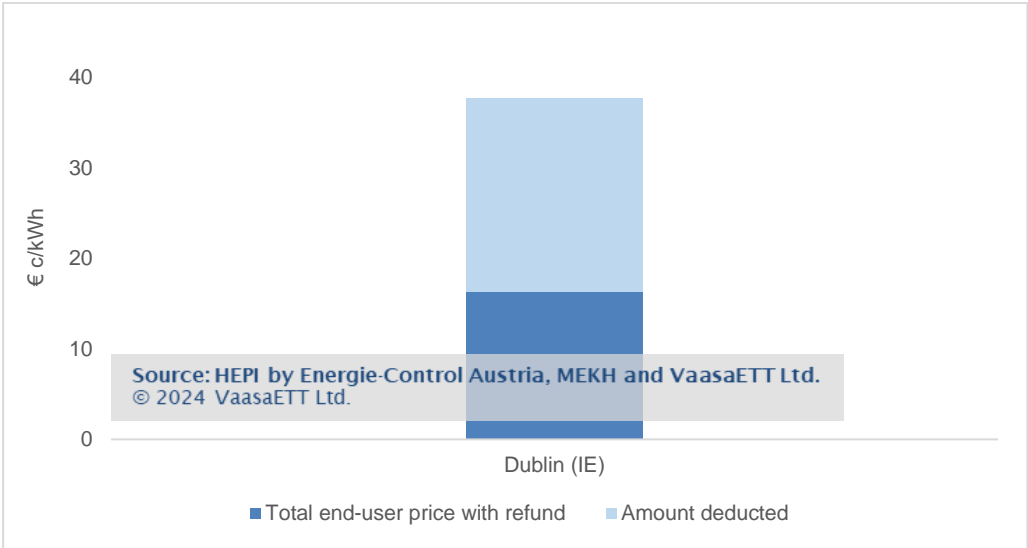
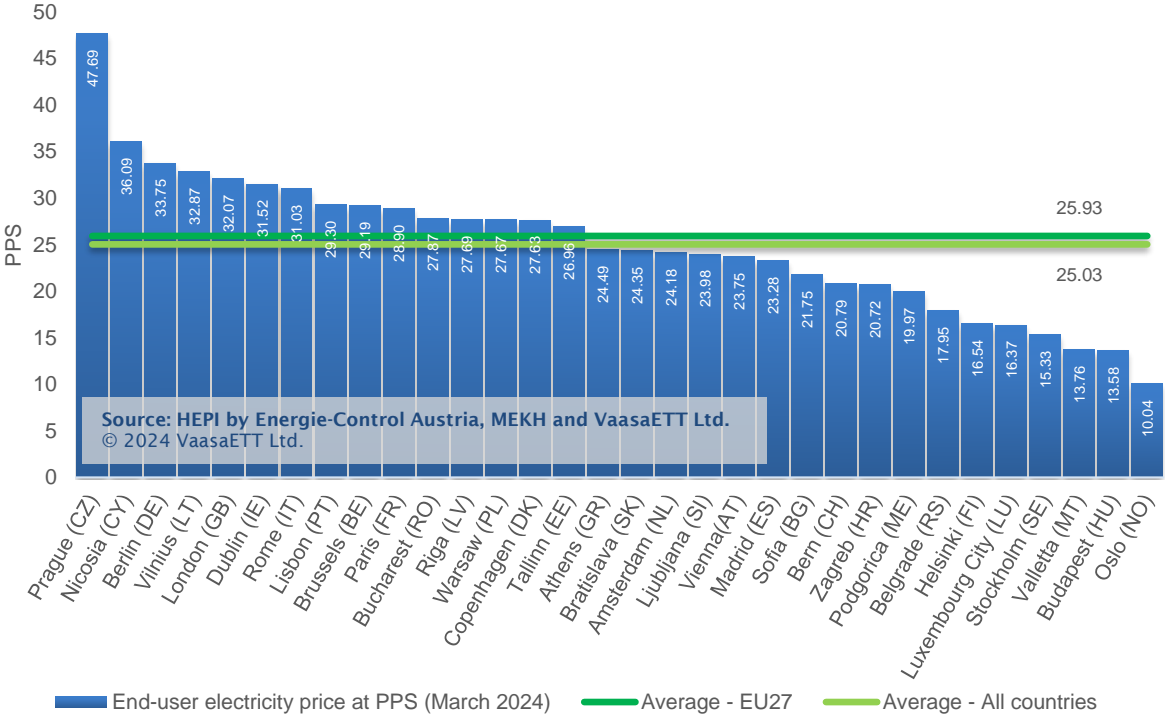


Figure 5: Residential electricity prices including taxes at PPS



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 countries¹⁰. 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, Budapest, Valletta, and Stockholm while the highest are currently in Prague, Nicosia, Berlin and Vilnius. Most of the CEE countries usually 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 5).

However, this is not the case in March; Bucharest, Prague, Riga, Tallinn, Vilnius and Warsaw are the capital cities among the CEE countries in which the price of electricity is above the European average.

Figure 6: Residential electricity price breakdown¹¹

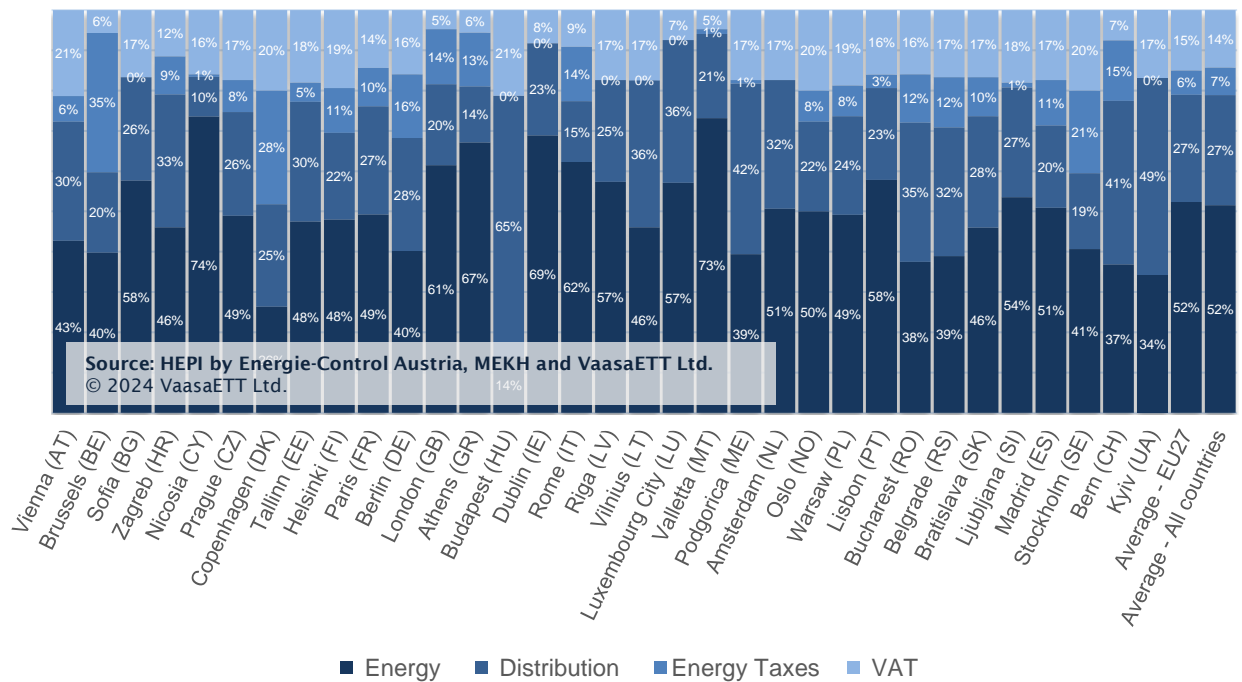


Figure 6 shows the breakdown of the electricity price in the 33 analysed capitals, into energy, distribution, energy taxes¹² and VAT. Our survey shows that on average, energy (the contestable

¹⁰ Eurostat: [Purchasing power parities - Overview](#)

¹¹ Please note that proportions appearing in the graph are rounded, and due to this may not add up to 100%. Additionally, 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 70%, distribution 44%, energy taxes -31%, and VAT 17%. For Luxembourg City (LU), 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 90%, distribution 56%, energy taxes -53%, and VAT 7%.

¹² Energy taxes component is the sum of all the taxes, fees and levies.

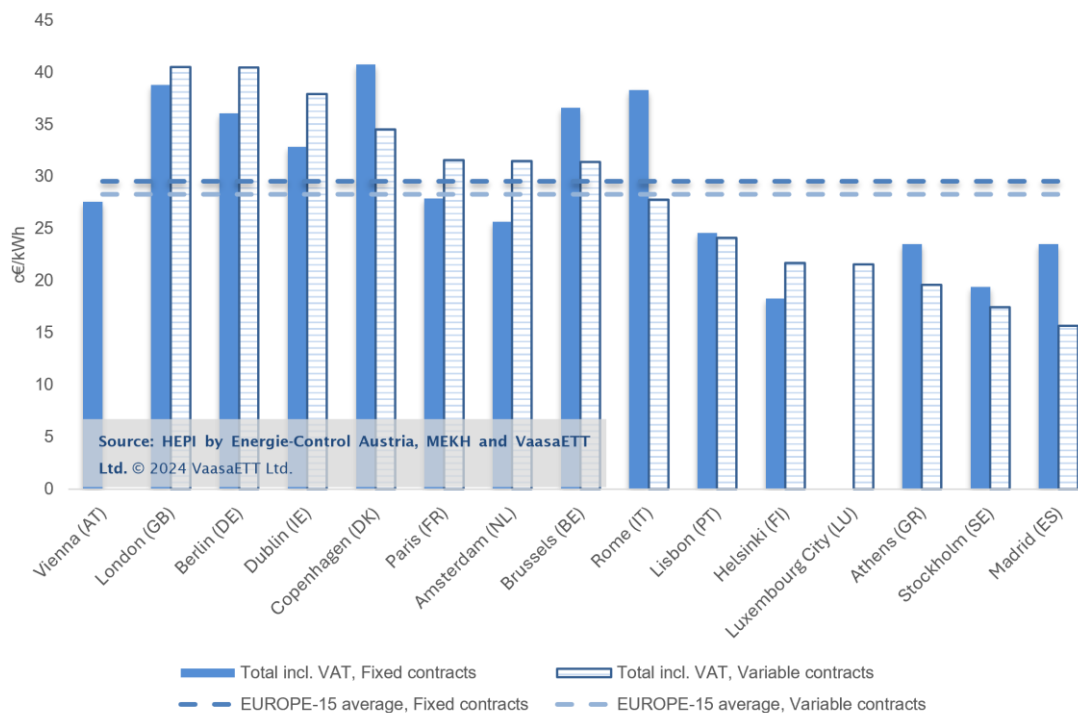
component of the price) represents 52% of the end-user price of electricity bill, distribution 27%, energy taxes 6% and VAT 15% for the EU capitals.

If we focus on the cost of energy as a commodity, in Budapest it currently represents just 14% of the end-user electricity price, which is the lowest among all surveyed cities. On the contrary, Nicosia has the greatest energy percentage, reaching 74% of the end-user price in March 2024.

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.

In the same manner, in Luxemburg City¹³, the typical customer is paying negative energy taxes as a result of the compensation mechanism that is currently in force, intended to offset the increase in the energy component and stabilise prices to 2022 levels.

Figure 7: All-in electricity end-user price including VAT (c€/kWh) for EUR-15, average fixed vs variable contracts.



¹³ ILR: [“Règlement ILR/E22/58 du 28 décembre 2022 fixant la contribution au mécanisme de compensation de la catégorie A pour l’année 2023 - Secteur Électricité.”](#), 28.12.2022

Before the energy crisis fixed (price and term) and variable prices were relatively similar. A fixed price was often cheaper since it afforded the supplier lower loyalty and procurement risk. Though customers essentially gambled a little on the direction of the market, it was not a particularly significant choice for most customers. In the more mature markets at least, active customers nevertheless tended to choose fixed prices. Since the crisis, the situation has mostly reversed. Fixed prices, where available (in some markets they have been unavailable since early or mid-crisis), were higher than variable prices, in some cases by a very large margin. However, this trend seems to be reversing again. In March 2024, the number of fixed offered contracts appears to be increased while their average price is higher than the average variable price only by 1.28 c€/kWh. This is also observed in the majority of the EUR15 markets when studied individually, with fixed contracts being on average cheaper than variable ones in only 6 out of the EUR15 individual markets.

Figure 8: All-in electricity end-user price including VAT (c€/kWh) for EUR-15, variable contracts only

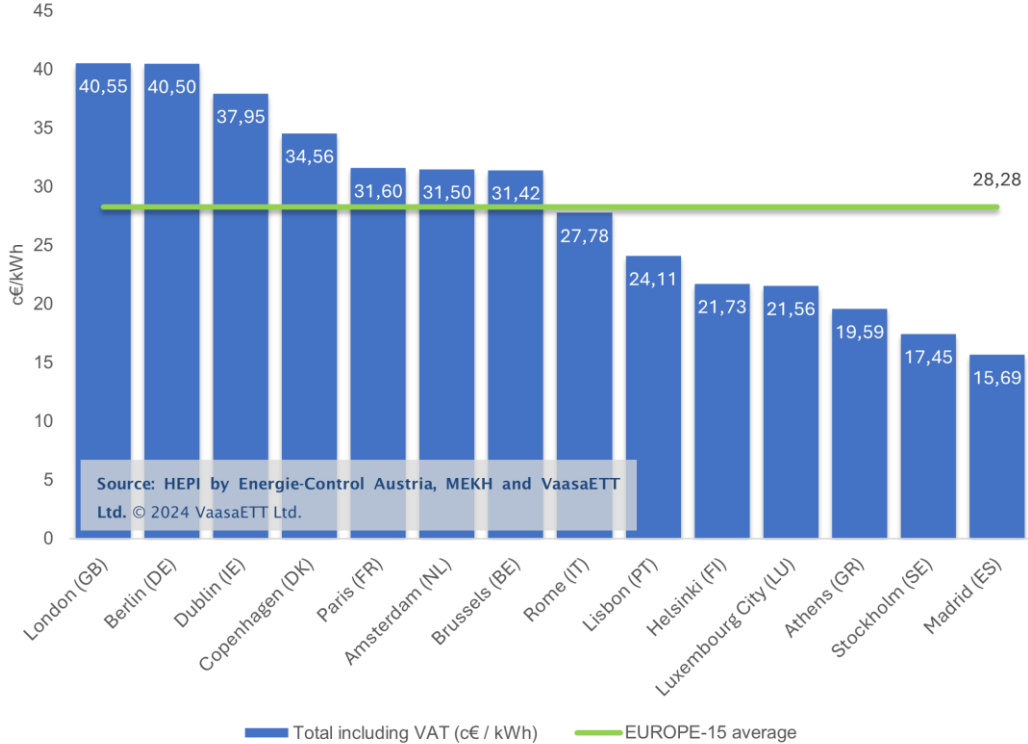
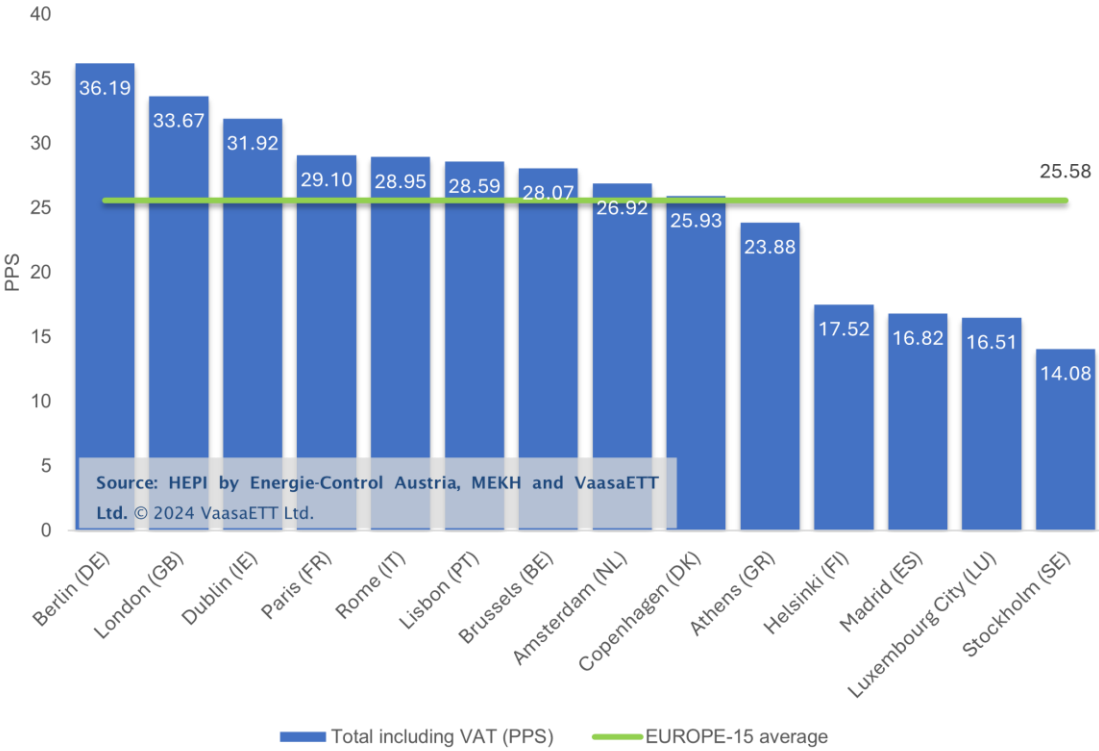


Figure 7 and Figure 8 show the situation as of March 2024 for a selection of markets, the EUR-15 markets. Across all the markets shown, the average price for fixed prices was 29.57 c€/kwh. For variable prices it was 28.28 c€/kWh. Naturally, for those markets where fixed prices are both available and very different from variable prices, the average of the two is less representative than in other markets.

If we adjust the variable prices for purchasing parity (Figure 9), we arguably gain a clearer picture of the relative significance of the most popular prices in March 2024.

Figure 9: All-in electricity end-user price including VAT (PPS) for EUR-15, variable contracts only



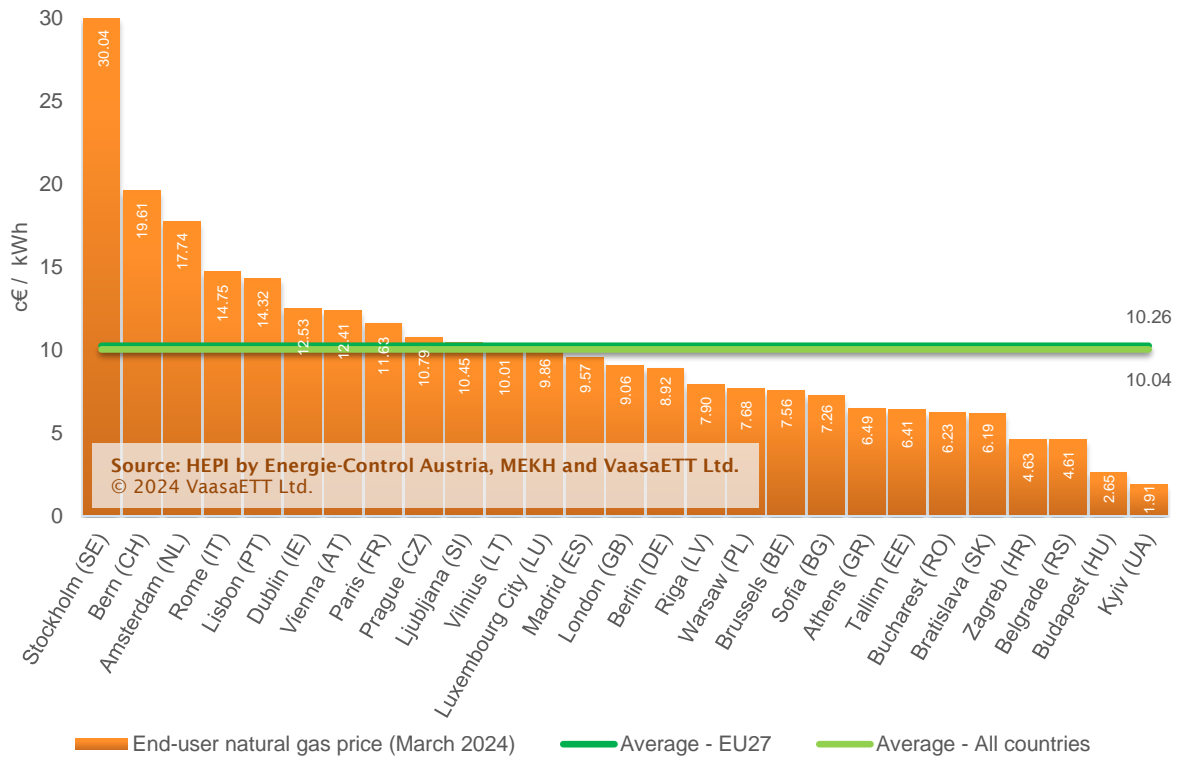
Residential Gas Prices

Figure 10 shows the price of natural gas paid typically by residential customers in 28 European capital cities as of March 1st, 2024¹⁴. The highest price is paid by inhabitants of Stockholm who pay almost 3 times the European average end-user price, followed by Bern, which is the second most expensive capital city. This can be explained by the nature of the Swedish gas market; the small size of only 77,000 household gas customers in the whole of Sweden of which 50,000 in the isolated gas network in Stockholm.¹⁵ Amsterdam is currently the third most expensive capital city.

¹⁴ Please note that Copenhagen, 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.

¹⁵ The Swedish electricity and natural gas market 2022 Ei ([Ei R2023:13](#))

Figure 10: Residential gas prices including taxes



The price in Stockholm is over 11 times as high as in Budapest, which is the cheapest city for gas in EU, and almost 16 times as high if we include Kyiv. Household natural gas is usually cheaper in the CEE countries; Ljubljana and Prague are the only capital cities among the CEE countries in which the price of natural gas is above the European average.

The most significant changes that took place in the natural gas market this month were as follows ¹⁶:

- A 10% price decrease in Sofia, due to a decrease in the energy component;
- A 9% price decrease in Riga, due to a decrease in the energy component;
- A 7% price decrease in London and Tallin, due to decreases in their energy components;
- A 6% price decrease in Brussels and Prague, due to decreases in their energy components;
- A 6% price decrease in Athens and Dublin, due to decreases in the energy and distribution components;
- A 5% price decrease in Berlin, due to a decrease in the energy component;
- A 4% price decrease in Paris and Rome, due to decreases in their energy components;
- A 2% price decrease in Vienna, due to decreases in the energy and energy taxes components.

¹⁶ The change in each capital city is calculated using the prices in their local currency to exclude the impact of exchange rate fluctuations.

The downward trend in the European gas markets continues in March, with none of the European capital cities under review experiencing any price increase, for a second consecutive month. On the contrary, decreases were observed in 14 out of the 27 capitals, with the most significant (-10%) being in Sofia. The TTF benchmark index remained below 30€/MWh for the whole month, showing stability at price levels last seen prior to the energy crisis. This winter's mild weather and high renewable generation contributed to maintaining gas reserves at high levels, while there is confidence that there will be no issues concerning supply or storage for the upcoming winter, as well¹⁷, now that the heating season is approaching its end.

Sofia experienced a decrease in the natural gas end-user price for a third consecutive month, due to the price trends on international markets and the long-term gas contract with Azerbaijan, as the energy regulator states.

The natural gas end-user price marked a drop in both Riga (-9%) and Tallin (-7%) also driven by a rupture that occurred in the Balticconnector undersea gas pipeline¹⁸. The incident, that prevented Latvian gas to be transferred to Finland, led to an oversupply in the Baltics and drove prices down.

A 7% decrease was observed in London as a result of abundant supply from Norway and mild weather forecasts¹⁹. Similar price reductions have been noted in Brussels, Athens and Prague, where natural gas end-user prices marked a 6% drop, as the heating season comes to an end.

In Dublin, prices continue the downward trend that started in November 2023, since suppliers announced new cuts to their gas prices²⁰, resulting in a 6% decrease this month.

Lastly, the natural gas end-user price in Berlin marked a decrease (-5%) for a fourth consecutive month. However, prices are expected to rise next month as the temporarily reduced VAT, that was applied on natural gas bills from October 2022, will return to its typical value.

In the same vein as for electricity, gas prices at PPS have a very different outcome from the actual prices. This month, Budapest, Zagreb and Brussels were the cheapest cities when adjusted to PPS (Figure 11).

¹⁷ Reuters: "[Europe's gas stocks point to healthy supply next winter](#)", 27.03.2024

¹⁸ ERR: "[Balticconnector rupture led to lower gas prices in Estonia, higher in Finland](#)", 20.03.2024

¹⁹ Trading Economics: "[UK Natural Gas](#)"

²⁰ Irish Examiner: "[Irish households to see energy bills fall as price cuts take effect from Friday](#)", 29.02.2024

Figure 11: Residential gas prices including taxes at PPS

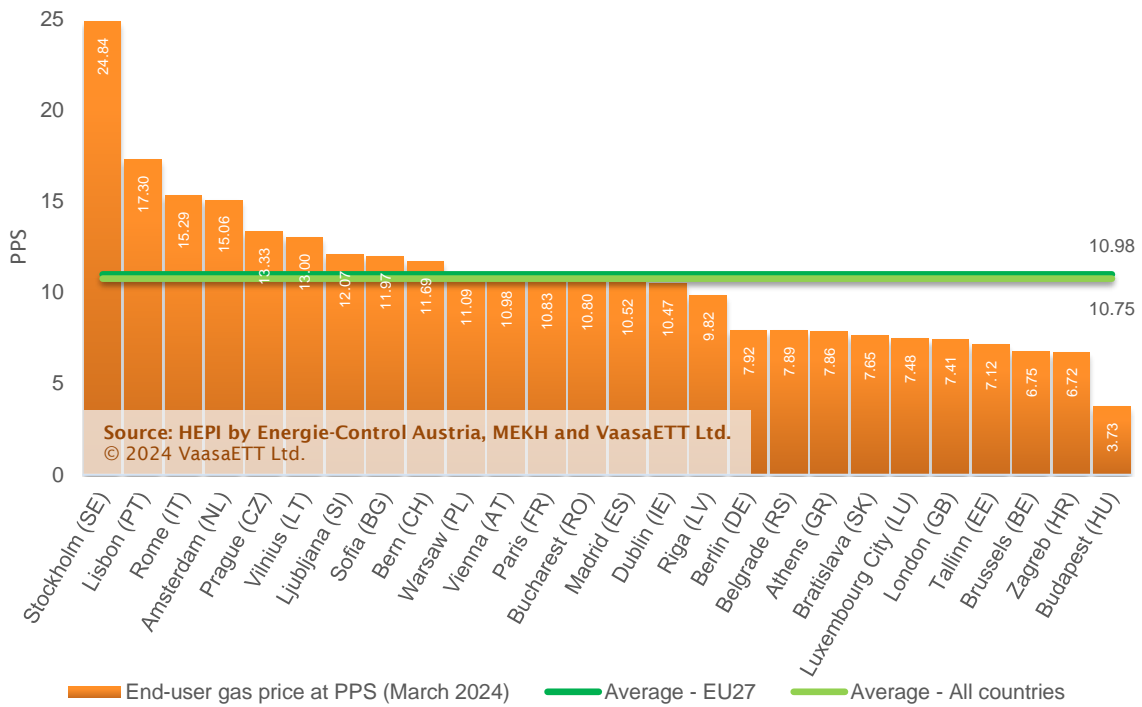
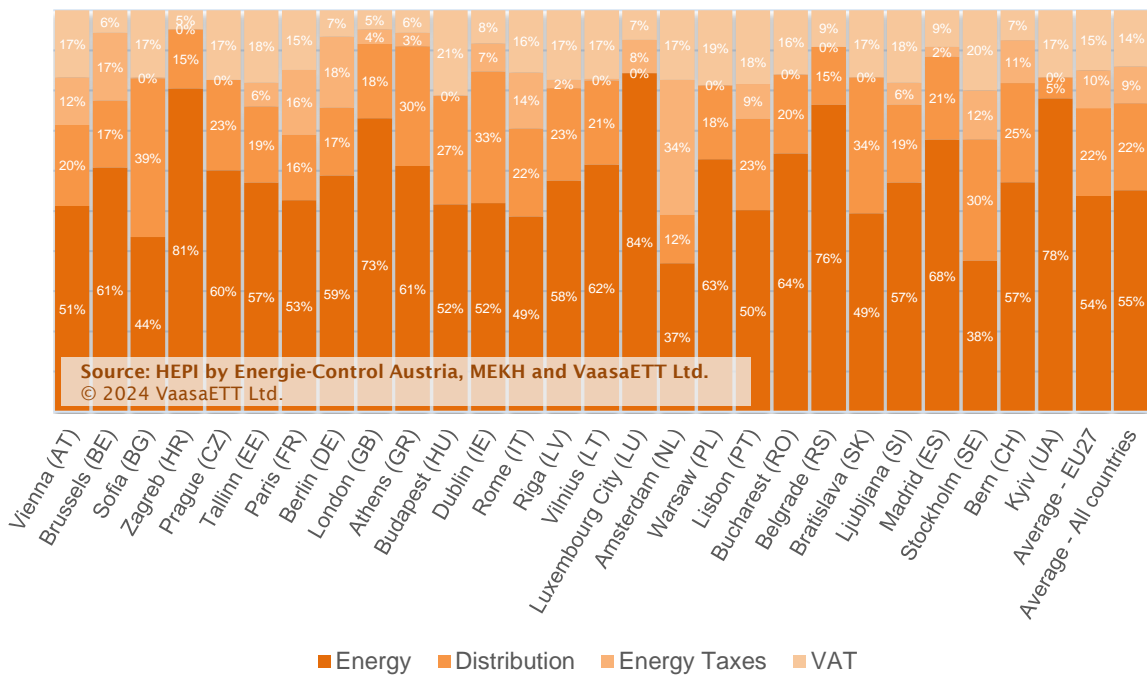


Figure 12: Residential gas price breakdown



Our survey shows that on average, energy (the contestable component of the price) represents 54% of the end-user price of natural gas, distribution 22%, energy taxes 10% and VAT 15% for the European capitals. In the Netherlands, energy taxes are used for nudging the consumers' behaviour and energy use. Even so starting from January 2020, the energy tax for residential natural gas user is typically around 34%. The aim is to encourage the use of electric heating and appliances instead of gas.

Overall, results show that market forces represent about 53% of the end-user price both for electricity and gas, whereas national fiscal and regulatory elements are responsible for the remaining 47% through distribution tariffs, energy taxes and VAT. The current energy crisis has led to significant increase of the average energy component in EU capitals. The energy share of end-user price of electricity used to be 61% back in March 2022, then climbed at 62% a year later and is currently standing at 52%. Likewise, in the natural gas market, the energy component percentage of the end-user price used to be 61% back in March 2022 before reaching 63% in March 2023 and 54% this month. In places where the energy component is lower, so is the incentive for customers to look for more competitive offers²¹.

²¹ 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.

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.

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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