



E-CONTROL



Household Energy Price Index for Europe

FEBRUARY 3, 2022

January 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 members of the European Energy Community, Great Britain, Norway 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 Berlin, Brussels, Bucharest, Helsinki, Rome and Stockholm

Electricity price increases in Bratislava, Copenhagen, Lisbon, London, Madrid, Prague, Riga, Vienna and Vilnius

Electricity price decreases in Amsterdam, Athens and Oslo

Significant natural gas price increases in Amsterdam, Athens, Berlin, Brussels, Bucharest, Ljubljana, London, Madrid, Riga, Tallinn, Vienna and Warsaw

Natural gas price increases in Bratislava, Copenhagen, Lisbon, Luxembourg City, Prague, Rome and Sofia

European Energy Price Development

Figure 1 shows the evolution of residential energy and distribution prices excluding taxes between January 2009 and January 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. The HEPI electricity index currently stands at the record-high level of 212 points, having climbed the sharpest step in its historical data.

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 92 points. After a small hike up to 95 points in March 2017, a bigger one followed to 102 points in November 2018. Following the decreasing trend of the past two years, the gas price index is constantly increasing, surpassing November 2018 levels for the first time in July 2021. The ongoing energy crisis greatly affected the gas price index which was almost doubled within 2021, going from 88 points in January 2021 to 163 points in December 2021. It currently stands at 247 index points, an all-time high level in its records, after a sharp increase in January 2022.

When examining the averages of the end-user prices for both electricity and gas, the following changes can be observed; from a year ago, January 2021, the electricity bills in all EU capitals have increased by 40% while the gas bills have increased by a staggering 85%.

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

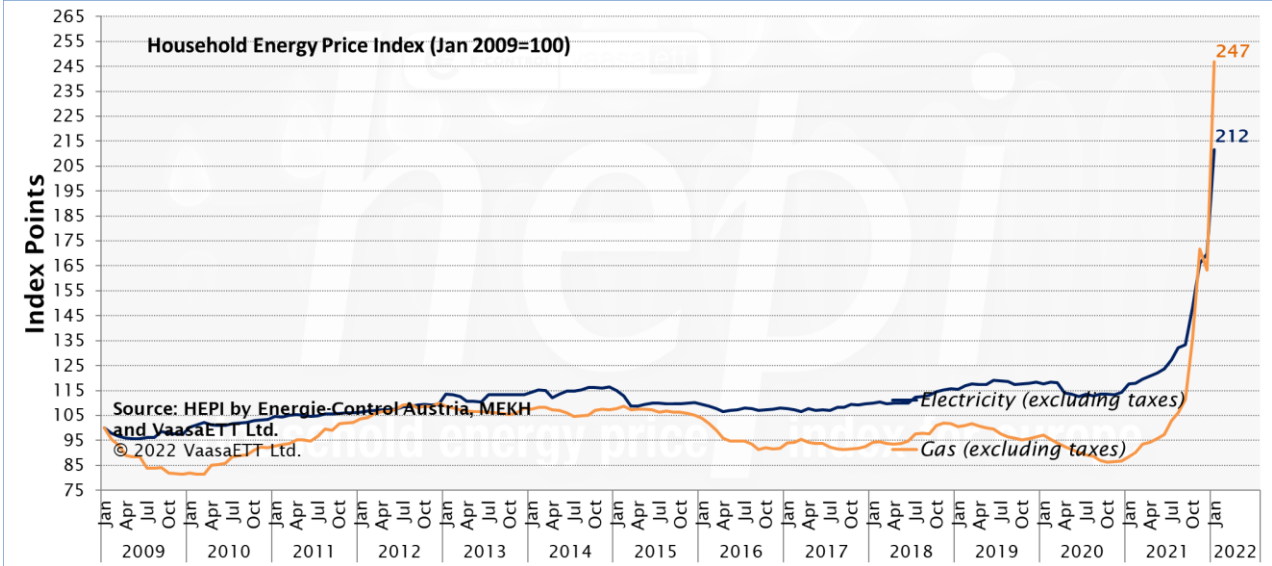
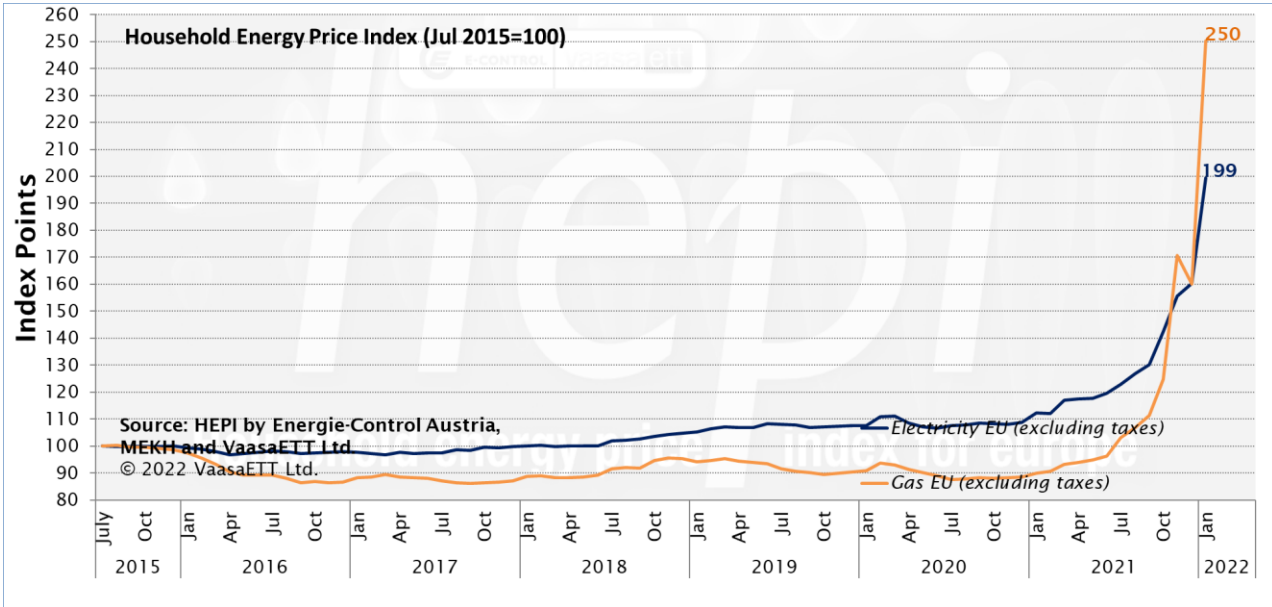


Figure 2 Evolution of residential energy and distribution prices excluding taxes in the EU¹



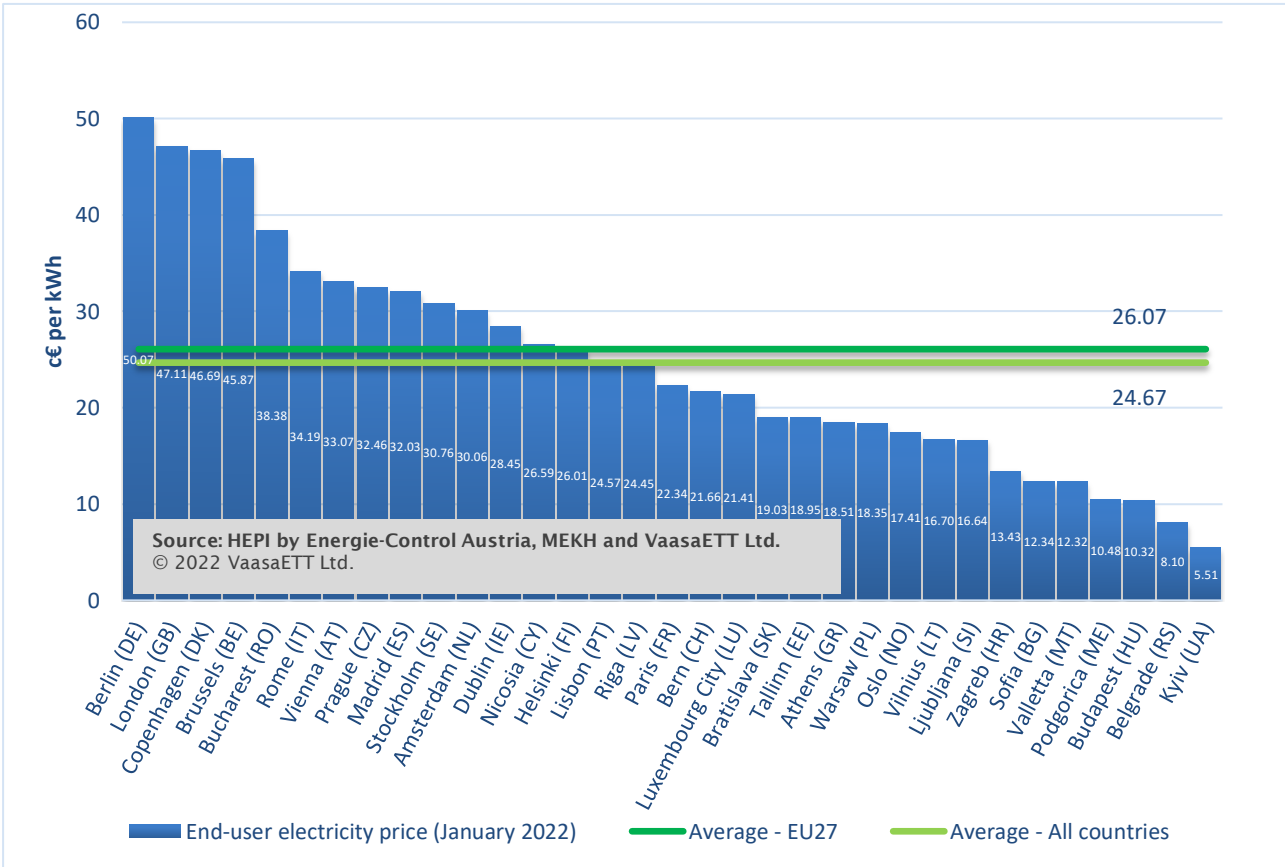
¹ EU-28 values were used between July 2015 - January 2020. EU-27 values are used from February 2020 onwards.

Residential Electricity Prices

Figure 3 shows the end-user price of electricity in the 33 European capital cities as of January 3rd, 2022. It shows that depending on where a customer lives in Europe, the price that a customer pays can vary by a ratio of 6.2. If we include Kyiv, the price varies by a ratio of 9.1. Berlin and London are by far the most expensive cities for household customers in Europe, followed by Copenhagen, Brussels and Bucharest.

Inhabitants of Kyiv pay the least expensive followed by inhabitants of 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 Bucharest 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 46% price increase in Bucharest, due to increases in the energy component, the energy taxes and the distribution component;
- A 38% price increase in Berlin, due to increases in the energy component, the distribution taxes and the distribution component;
- A 37% price increase in Helsinki, due to an increase in the energy component;
- A 31% price increase in Rome, due to an increase in the energy component;
- A 26% price increase in Stockholm, due to increases in the energy component, the energy taxes and the distribution component;
- A 24% price increase in Brussels, due to increases in the energy component and the energy taxes;
- A 19% price increase in Prague, since VAT returned to its previous value;
- A 19% price increase in London;
- A 17% price increase in Copenhagen, due to an increase in the energy component;
- A 13% price increase in Vienna, due to increases in the energy component, the distribution taxes and the distribution component;
- A 12% price increase in Bratislava, due to increases in the energy and the distribution components;
- A 10% price increase in Vilnius, due to an increase in the energy component;
- A 9% price increase in Madrid, due to an increase in the energy taxes;
- A 7% price increase in Riga, due to an increase in the energy component;
- A 5% price increase in Lisbon, due to an increase in the energy component;
- An 18% price decrease in Athens, due to decreases in the energy component, the energy taxes and the distribution component;
- A 12% price decrease in Amsterdam, due to a decrease in the energy taxes;
- A 9% price decrease in Oslo, due to decreases in the energy component, the energy taxes and the distribution taxes.

In general, the upward trend in European energy prices continued this month, resulting in substantial increases, while most cities studied are standing once again at record high prices. Specifically, those would be Berlin, Bern, Bratislava, Brussels, Bucharest, Copenhagen, Helsinki, Kyiv, Ljubljana, London, Luxembourg City, Madrid, Prague, Riga, Rome, Stockholm, Vienna and Vilnius. The continuous upward trend is attributed to the economic recovery after the resumption of the world activity and the extraordinary weather conditions which led to higher demand, the raw material appreciation

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

(record high natural gas price), which combined with empty gas storages put more pressure on the natural gas price and finally, the record high CO2 emissions allowances.

In Bucharest, high procurement prices for natural gas and the high CO2 permits for coal affect the retail electricity prices significantly. Furthermore, 40-55% of the energy is traded in the Day-Ahead market. As a result, the prices are more volatile and result to more expensive retail prices².

As a general trend, countries that rely on natural gas for a big proportion of their electricity generation are among the ones that were greatly affected during the steep rise of wholesale gas prices. In Berlin, increased retail energy prices stem from high gas procurement prices, as Germany relies on natural gas not only for heating but also for a significant part of the electricity production³. Also, the UK is one of the biggest users of natural gas in the continent, with 85 per cent of households using gas central heating and one third of the country's electricity generated by natural gas.

Given the extreme circumstances in the energy market, many suppliers have stopped offering their cheaper contracts and in total the number of available options has significantly reduced for residential customers⁴. For instance, in the UK 20 suppliers have gone out of business within last semester⁵. As a global trend, most suppliers seem to focus more on retaining their existing customers rather than acquiring new ones, applying different pricing strategies for existing and new customers. As a result of that, customers that need to change supplier (i.e. their current supplier went bankrupt, their low-cost contract was terminated, their contracts expired) end up paying a much higher amount to purchase basic supply contracts. Indicatively, in Germany, new customers have to pay 889 to 1654 euros more than the existing ones⁶.

Another reason behind the January price increases is the termination of the support measures that were applied during the latter part of 2021. For instance, in Prague, the energy tax-waiver scheme applied in November and December 2021 was not extended for 2022. As a result, electricity and gas supply are again subjected to VAT rate of 21%, which led to significant increases in the prices.

Many governments in Europe have adopted various measures to restrain the steep rise of electricity prices. In some rare occasions those measures have led to price decreases, such as Amsterdam and Oslo. Some of the measures applied include reduction or cut of taxes and subsidies on electricity bills.

² RFI: "[Why the price of electricity in Romania has increased](#)", 17.01.2022

³ ZDF Heute: "[Will gas and electricity costs stay that high?](#)", 19.01.2022

⁴ HEPI: "[Energy supplier bankruptcy wave across Europe and fewer contract options](#)", 03.12.2021

⁵ BBC News: "[Why are gas bills so high and what's the energy price cap?](#)", 02.02.2022

⁶ Handelsblatt: "[Annual additional costs of 1654 euros for electricity - increased energy prices alarm consumer advocates](#)", 24.01.2022

In Austria, the green electricity tax in electricity bills will be zero for 2020⁷; Cyprus reduced the VAT rate for electricity from 19% to 9% for three months starting from November 2021⁸; in the Netherlands the energy tax has been further reduced from -559€ to -825€ for a typical household⁹; the Polish Government reduced the VAT from electricity bills from 23% to 5% and abolished the electricity excise tax¹⁰; the Spanish Government has extended the tax reductions on electricity bills that started applying during 2021¹¹ and limited the Cost of Raw Material (CMP) to 15%, scaling down the expected price increase of 84% to 9%^{12,13}. Another common category of support measures is governmental compensation payment. In Greece, electricity bills are subsidised by the government according to the level of consumption¹⁴; in Norway, if the spot electricity price for an area exceeds a certain level, the government compensates the consumer by covering a part of the price¹⁵; Estonians have introduced a threshold in the price per kWh and are reimbursed by the government for part of the bill if this threshold is exceeded¹⁶. Finally, many countries have announced support measures focusing on specific customer categories targeting vulnerable customers, businesses etc. and hence are not reflected on the average price for a typical household.

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 countries. 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 Bucharest, Berlin, Prague and Brussels. Most 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); Prague and Bucharest are the only capital cities among the CEE countries in which the price of electricity is above the European average.

⁷ ORF: [“Report: Green electricity subsidy will be flat in 2022”](#), 25.11.2021

⁸ Cyprus Ministry of Finance: [“Issuance of a decree on the temporary reduction of the VAT rate on electricity”](#), 17.12.2021

⁹ Rijksoverheid: [“Maatregelen toegevoegd aan Belastingplan 2022”](#)

¹⁰ Polish Press Agency: [“Poland offers tax-cut package to ease inflation”](#), 25.11.2021

¹¹ EuroWeekly: [“Electricity prices in Spain to rise by around 15% this Monday”](#), 17.01.2022

¹² El Pais: [“Regulated natural gas rates will rise by 5.5% from January 1”](#), 25.12.2021

¹³ ABC: [“These will be the gas price increases for 2022”](#), 28.12.2021

¹⁴ Greece Ministry of Energy and Environment: [“Costas Skrekas: “395 million euros in January to support households and professionals”](#), 07.01.2022

¹⁵ Fjordkraft: [“Useful to know about the compensation scheme for electricity”](#)

¹⁶ Estonia Ministry of Finance: [“Reimbursement of energy costs”](#), 28.01.2022

Figure 4 Residential electricity prices including taxes at PPS

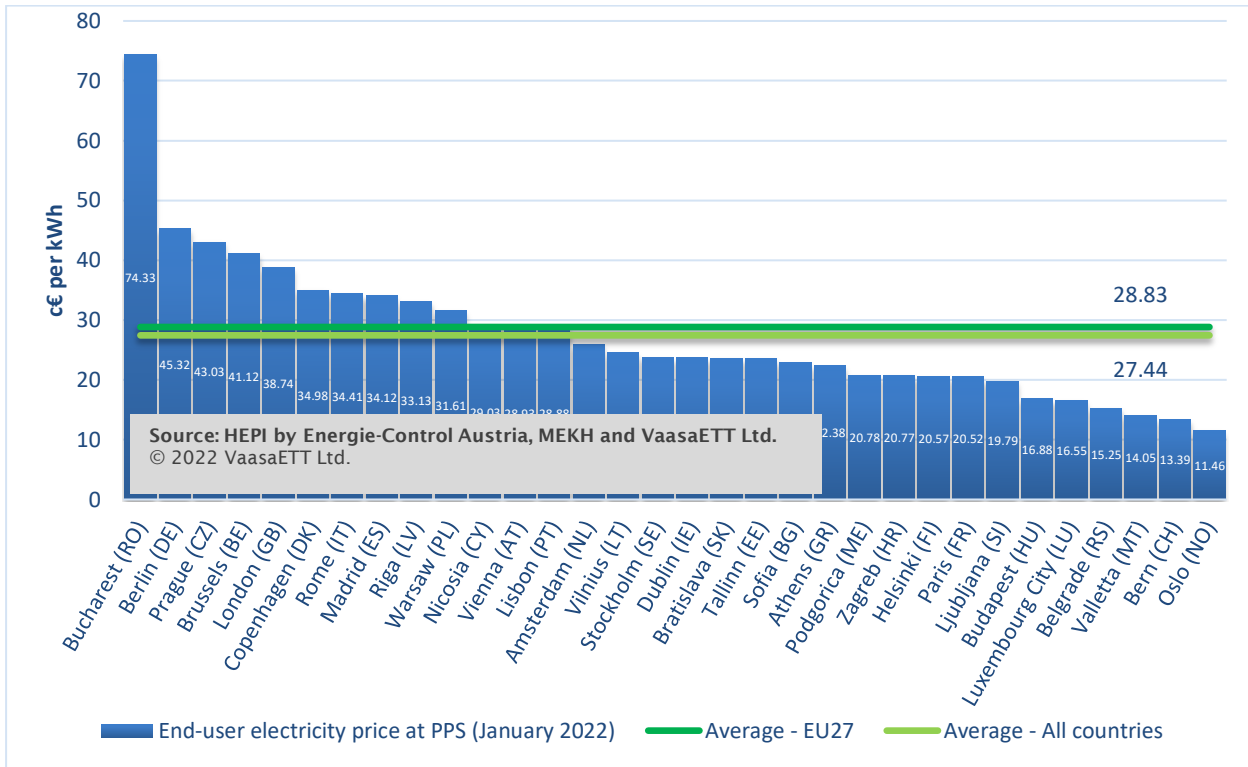
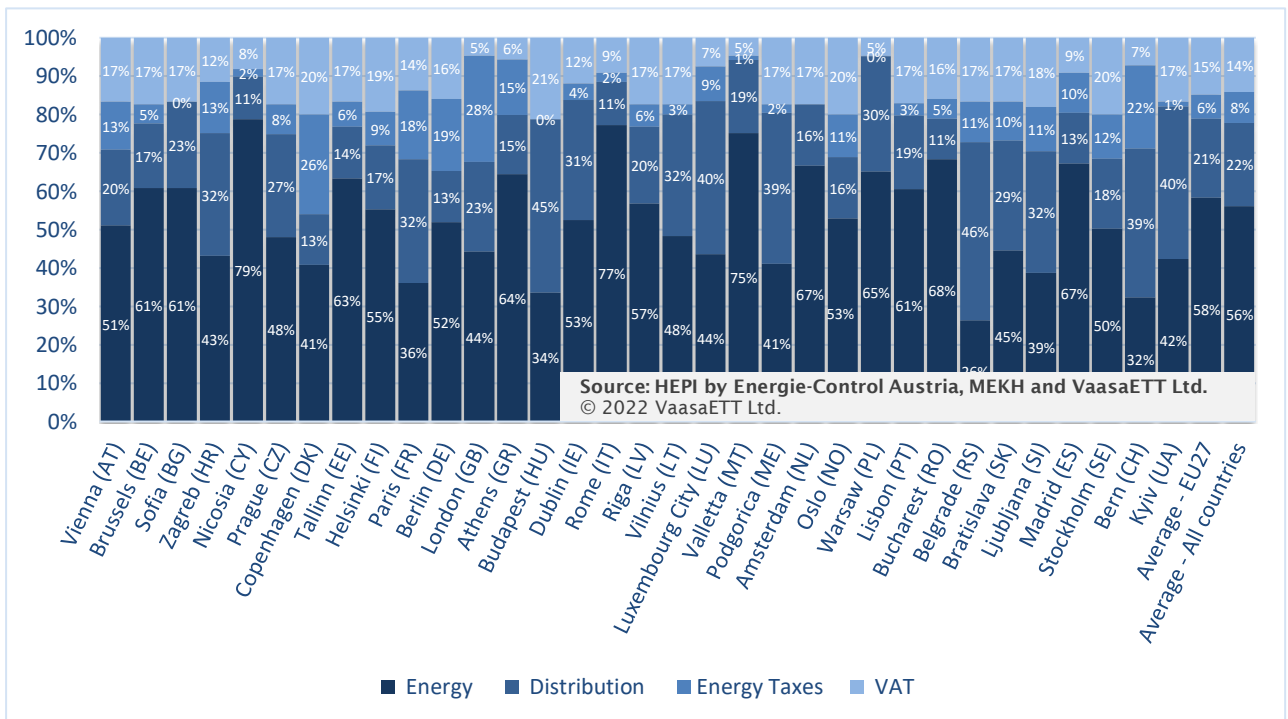


Figure 5 Residential electricity price breakdown¹⁷



¹⁷ Please note that proportions appearing in the graph are rounded, and due to this may not add up to 100%.

Copenhagen is a very unusual case; the cost of energy as a commodity represents just 41% of the end-user electricity price, the sixth lowest of all surveyed cities, whereas the energy taxes represent an astonishing 26% (over four times Europe's average) and 46% if we include VAT.

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, Nicosia has the greatest energy percentage, reaching 79% of the end-user price in January 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 January 3rd, 2022¹⁸. The highest price is paid by inhabitants of Amsterdam who pay over twice the European average end-user price and about 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 Stockholm¹⁹. Berlin is currently the third most expensive capital, while Copenhagen stands at the fourth place of the most expensive capitals.

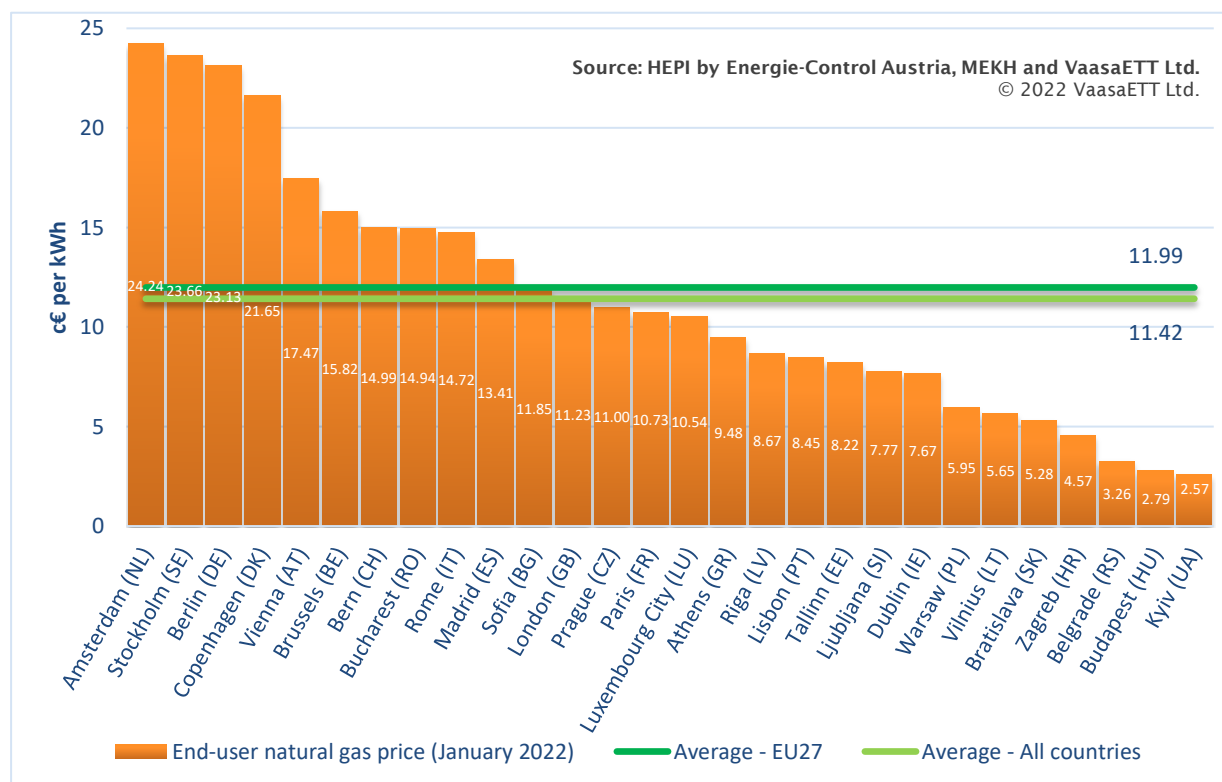
The prices in Amsterdam are almost 9 times as high as in Budapest, which is the cheapest city for gas in EU, and over 9 times as high if we include Kyiv. Even more pronounced than for electricity, household natural gas is cheapest in the CEE countries.

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 72%, distribution 24%, energy taxes -13%, and VAT 17%.

¹⁸ 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.

¹⁹ The Swedish electricity and natural gas market 2019 Ei (Ei R2020:07).

Figure 6 Residential gas prices including taxes



The most significant changes that took place in the natural gas market this month were as follows ²⁰:

- A 133% price increase in Berlin, due to increases in the energy taxes, the energy and distribution components;
- A 70% price increase in Riga, due to an increase in the energy component;
- A 63% price increase in Tallinn, due to an increase in the energy component;
- A 50% price increase in Madrid;
- A 45% price increase in Bucharest, due to an increase in the energy component;
- A 40% price increase in Vienna, due to increases in the energy component, the energy taxes, the distribution component and the distribution taxes;
- A 38% price increase in Brussels, due to an increase in the energy component;
- A 36% price increase in Warsaw, due to increases in the energy and the distribution components;
- A 29% price increase in Amsterdam, due to increases in the energy component and the energy taxes;
- A 26% price increase in London;
- A 25% price increase in Athens, due to an increase in the energy component;

²⁰ The change in each capital city is calculated using the prices in their local currency to exclude the impact of exchange rate fluctuations.

- A 22% price increase in Ljubljana, due to increases in the energy and distribution components;
- A 20% price increase in Prague, due to an increase in the distribution component and the VAT returning to its previous value;
- A 20% price increase in Sofia, due to an increase in the energy component;
- A 19% price increase in Bratislava, due to an increase in the energy component;
- A 17% price increase in Luxembourg City, due to increases in the energy component, the energy taxes and the distribution component;
- A 14% price increase in Rome, due to increases in the energy and distribution components;
- A 12% price increase in Copenhagen, due to increases in the energy component and the energy taxes;
- An 8% price increase in Lisbon, due to increases in the energy component and the energy taxes.

The ongoing upward trend in European end-user prices continued its climb in the natural gas market this month, resulting in increases once again, while more than half of the capital cities studied are standing once again at record high prices. Specifically, those would be Amsterdam, Berlin, Bern, Brussels, Bucharest, Copenhagen, London, Luxembourg City, Madrid, Paris, Prague, Riga, Rome, Sofia, Tallin, Vienna, and Warsaw. The main reason driving the end-user prices upwards is the low levels of global gas storages, that combined with increased natural gas demand resulted in the highest gas prices on the wholesale market observed in the past years.

In a similar manner to electricity, natural gas rises mostly affected countries that are heavily based on gas for their heating. Berlin²¹ is a characteristic example for that. Although the great majority of households in the UK also use gas heating, the price cap protected British households and scaled down the applied price increase.

Various support measures have also been introduced in the gas sector to restrain the steep rise of gas prices. The most common applied measures for gas sector include VAT reductions (e.g. Poland²², Italy²³) and governmental reimburses for part of the bill. For instance, in Greece, gas bills are subsidised by the government according to the level of consumption²⁴, while Estonian households also receive a reimbursement from the government if gas price exceeds a set threshold²⁵.

²¹ ZDF Heute: [“Will gas and electricity costs stay that high?”](#), 19.01.2022

²² Polish Press Agency: [“Poland offers tax-cut package to ease inflation”](#), 25.11.2021

²³ Consumatori.it: [“Electricity and gas: the increases in the coming months \(1 January - 31 March 2022\)”](#), 03.01.2022

²⁴ Greece Ministry of Energy and Environment: [“Costas Skrekas: “395 million euros in January to support households and professionals”](#), 07.01.2022

²⁵ Estonia Ministry of Finance: [“Reimbursement of energy costs”](#), 28.01.2022

Figure 7 Residential gas prices including taxes at PPS

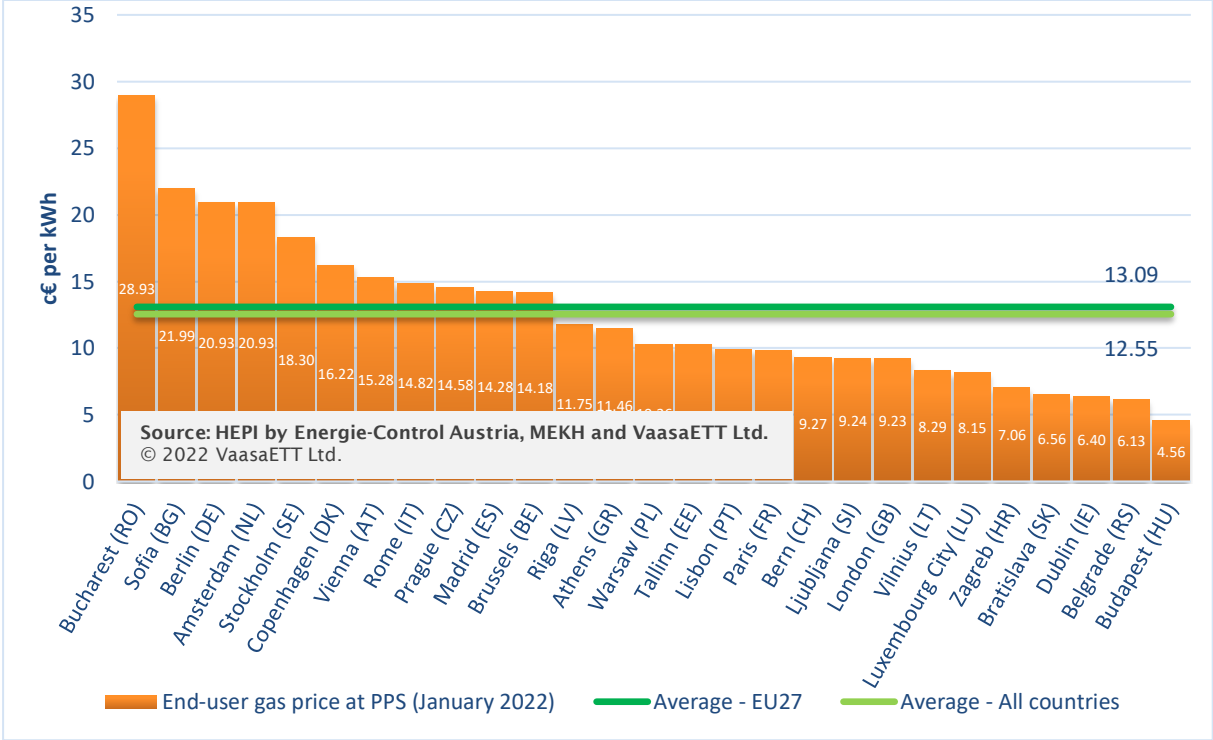
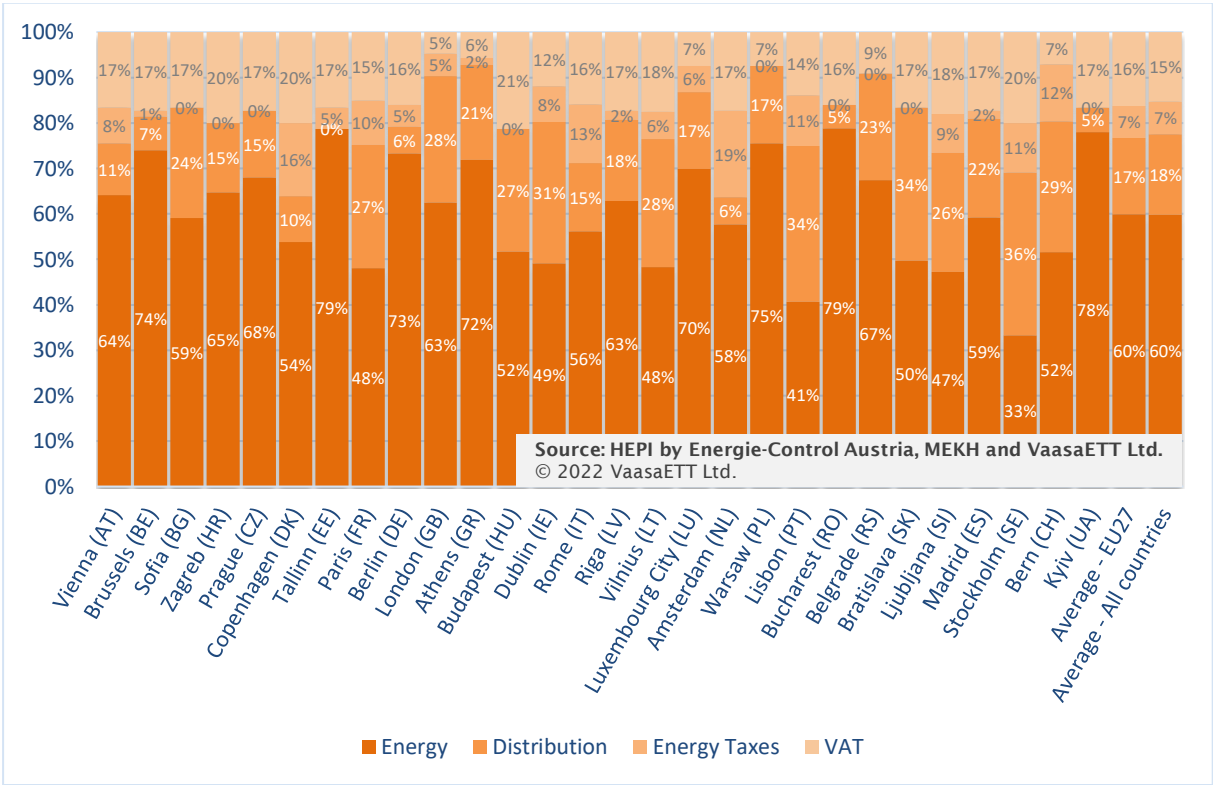


Figure 8 Residential gas price breakdown²⁶



²⁶ Please note that proportions appearing in the graph are rounded, and due to this may not add up to 100%

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 Dublin were the cheapest cities when adjusted to PPS (Figure 7).

Our survey shows that on average, energy (the contestable component of the price) represents 60% of the end-user price of natural gas, distribution 17%, energy taxes 7% and VAT 16% 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 19%. The aim is to encourage the use of electric heating and appliances instead of gas.

Overall, results show that market forces represent only about half of the end-user price both for electricity and gas, whereas national fiscal and regulatory elements are responsible for the other half through distribution tariffs, energy taxes and VAT. In places where the energy component is lower, so is the incentive for customers to look for more competitive offers²⁷.

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

²⁷ You may download the latest version of VaasaETT's survey of utility customer switching at <http://www.vaasaett.com/projects-2/#ucsrp>.

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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