

Household Energy Price Index for Europe

APRIL 29, 2022

April 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 Brussels, Copenhagen, London, Oslo, Rome, Tallin and Vienna

Electricity price increases in Bucharest, Helsinki, Lisbon, Nicosia, Prague and Stockholm.

Electricity price decreases in Amsterdam, Athens and Madrid

Significant natural gas price increases in Athens, Brussels, London, Tallinn and Vienna

Natural gas price increases in Bern, Bucharest, Copenhagen, Lisbon, Ljubljana, Madrid, Paris, Prague, Rome, Sofia and Zagreb

Natural gas price decreases in Amsterdam, Berlin and Riga.

European Energy Price Development

Figure 1 shows the evolution of residential energy and distribution prices excluding taxes between January 2009 and April 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 climbed to a new all-time high this month and currently stands at 242 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 July 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 a new all-time high level of 310 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, April 2021, the electricity bills in all EU capitals have increased by 45% while the gas bills have increased by a staggering 90%.

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

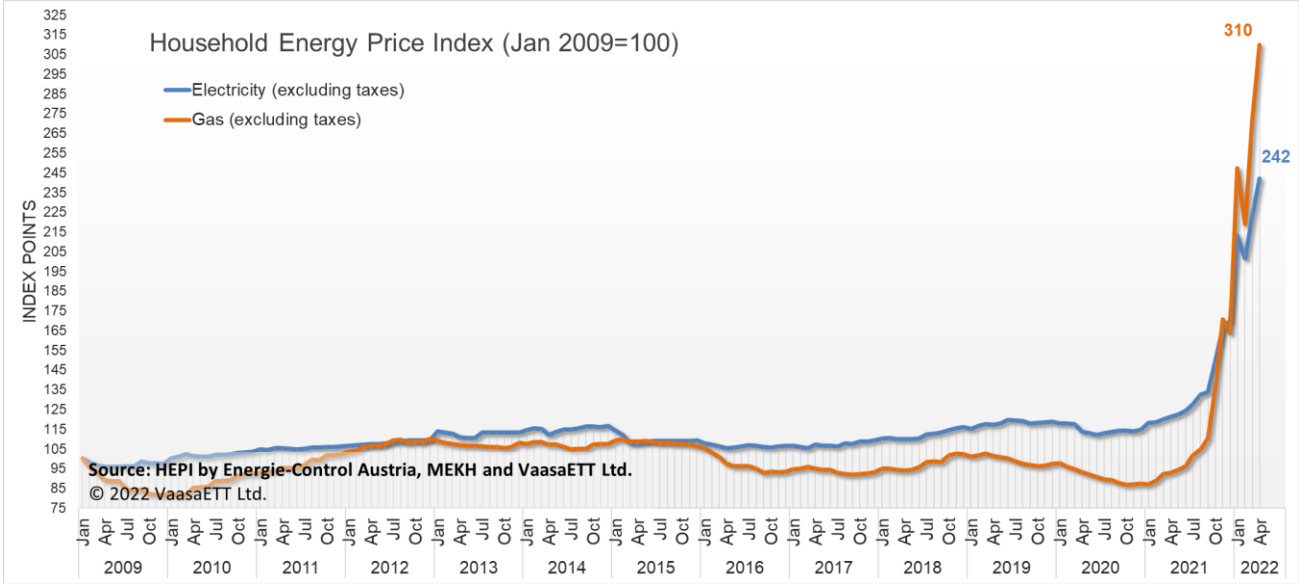
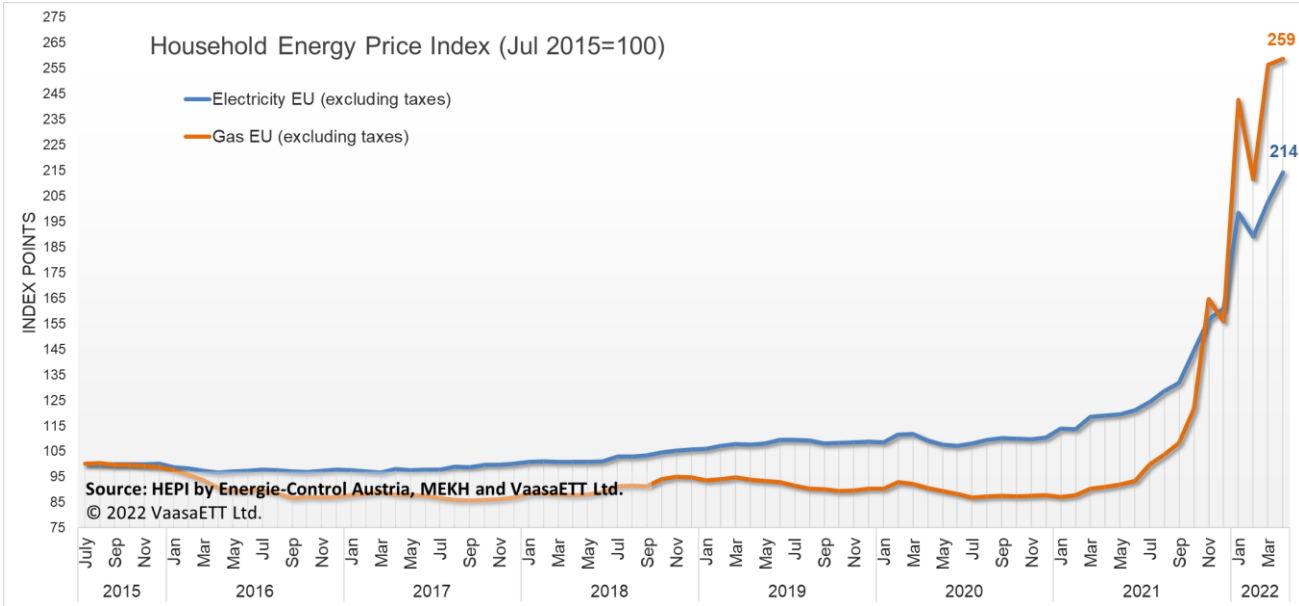


Figure 2: Evolution of residential energy and distribution prices excluding taxes in the EU¹



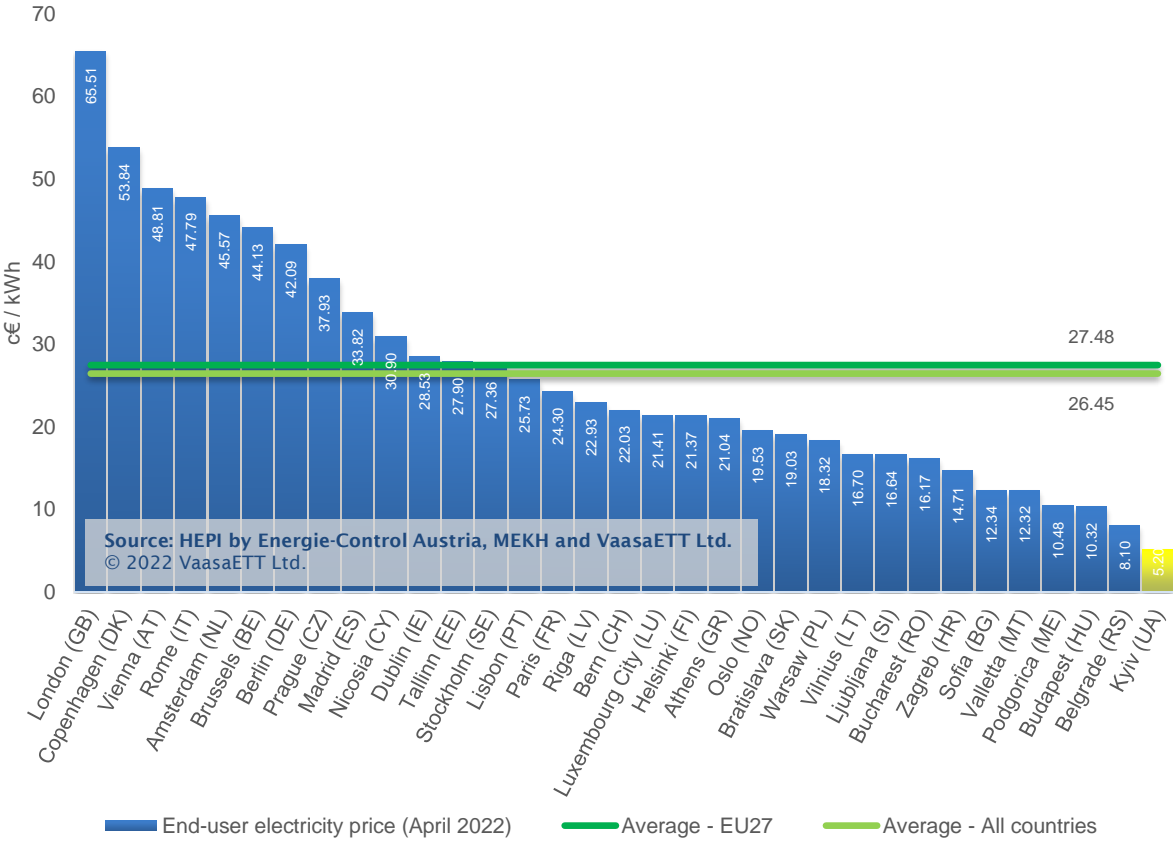
¹ EU-28 values were used between July 2015 - January 2020. EU-27 values are used from February 2020 onwards.

Residential Electricity Prices

Figure 3 shows the end-user price of electricity in the 33 European capital cities as of April 1st, 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 8. If we include Kyiv, the price varies by a ratio of over 12. London and Copenhagen are by far the most expensive cities for household customers in Europe, followed by Vienna, Rome and Amsterdam.

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 Tallinn 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 53% price increase in Vienna, due to increases in the energy component and the energy taxes;
- A 46% price increase in Tallinn, due to increases in the energy and distribution components, related to the fact that the compensation scheme is no longer applied;
- A 26% price increase in Copenhagen, due to increases in the energy and distribution components;
- A 26% price increase in Rome, due to an increase in the energy component;
- A 22% price increase in Brussels, due to an increase in the energy component;
- A 21% price increase in London;
- A 20% price increase in Oslo, due to increases in the energy component and the energy taxes;
- A 16% price increase in Nicosia, due to an increase in the energy component;
- A 14% price increase in Stockholm, due to an increase in the energy component;
- An 8% price increase in Prague, due to an increase in the energy component;
- A 5% price increase in Lisbon, due to an increase in the energy component;
- A 3% price increase in Helsinki, due to an increase in the energy component;
- A 2% price increase in Bucharest, due to an increase in the distribution component;
- A 14% price decrease in Amsterdam, due to a decrease in the energy component;
- A 12% price decrease in Madrid, due to decreases in the energy component and the energy taxes;
- An 11% price decrease in Athens, due to decreases in the energy and energy taxes components, according to the government's increased compensation.

Residential electricity prices continued their upward trend during this month, with Copenhagen, Lisbon, London, Nicosia, Paris, Prague, Rome, Tallinn and Vienna reaching new record-highs. Over the past few months, national governments have applied extensive measures to mitigate the impact of the energy crisis on household bills. In most of the cities studied, government interventions managed only to limit the level of price increases. The continuous upward trend is 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.

The large electricity price increase in Estonia is related with the expiration of the support measures that were implemented by the Estonian government during the period January-March 2022 to alleviate the effects for the energy crisis for Estonians³.

In London the increase of price cap by Ofgem by 54% led to a large price rise⁴, while in Rome, electricity prices increased although ARERA announced a 10.2% drop for the prices of the regulated market for the second quarter of 2022 compared to the first quarter; the decrease did not have a significant impact, as it is relatively small when considering that the price kept rising for 6 quarters in a row. Furthermore, the decrease is not enough to bridge the gap in prices between the regulated and the free market⁵. The Italian government has also adopted several countermeasures to cushion the impact of energy crisis on both electricity and gas bills⁶.

In Madrid, further support measures implemented by the government in combination with the extension of the existing tax relief measures until the end of June, resulted in a decline in electricity prices⁶. Similarly in Athens, the additional measures adopted led to a price decrease⁷. On the other hand, in other countries, such as Belgium and Norway, government interventions to mitigate the impact on electricity prices⁶ only limited the level of price increase, but they were not sufficient to reverse the upward trend.

A slight decrease was noticed for electricity customers in Amsterdam, following last month's extreme increase of 130%; this month's average price remains almost 97% higher than the one in February 2022.

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 countries⁸. 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 London, Rome and Prague. 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 ERR: "[Estonia has paid out €170 million in compensation for high energy prices](#)", 20.04.2022

⁴ CNN Business: "[Britons are paying 54% more for their energy starting now](#)", 01.04.2022

⁵ Key 4 Biz: "[Will bills really decrease from April 2022?](#)", 08.04.2022

⁶ Bruegel: "[National policies to shield consumers from rising energy prices](#)", 26.04.2022

⁷ Odigos Tou Politi: "[Subsidy for electricity bills April 2022](#)", 07.04.2022

⁸ Eurostat: [Purchasing power parities - Overview](#)

Figure 4: Residential electricity prices including taxes at PPS

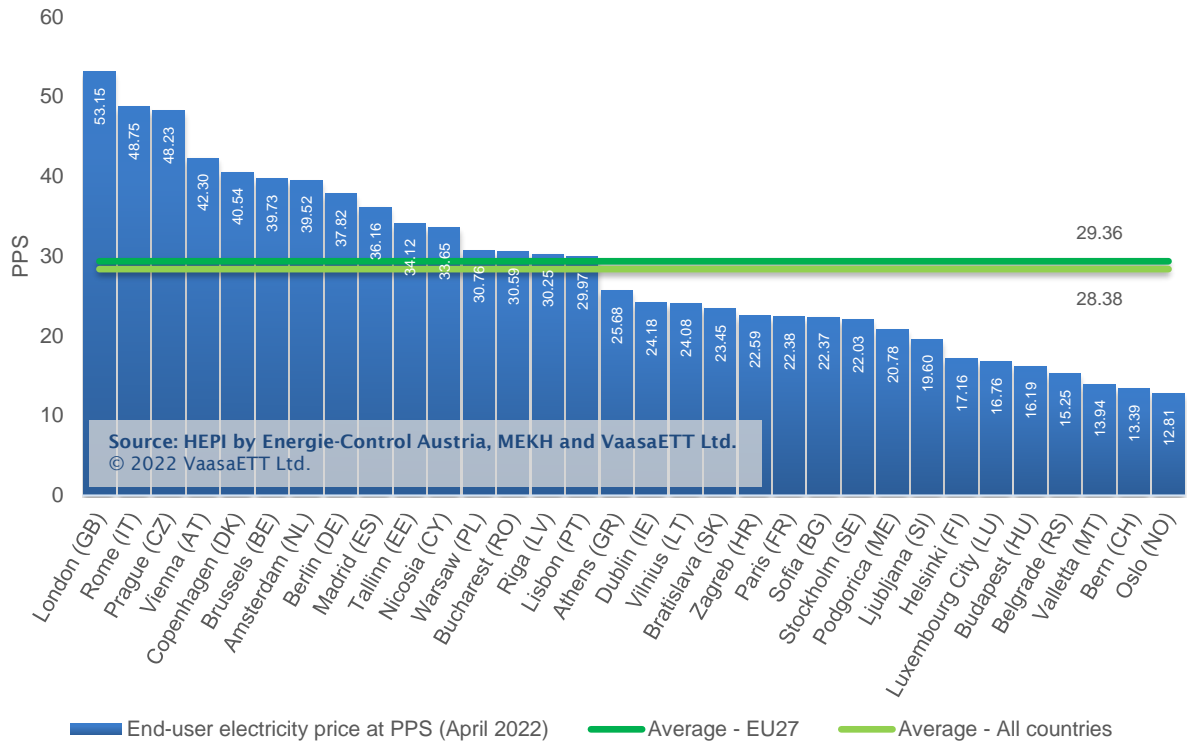
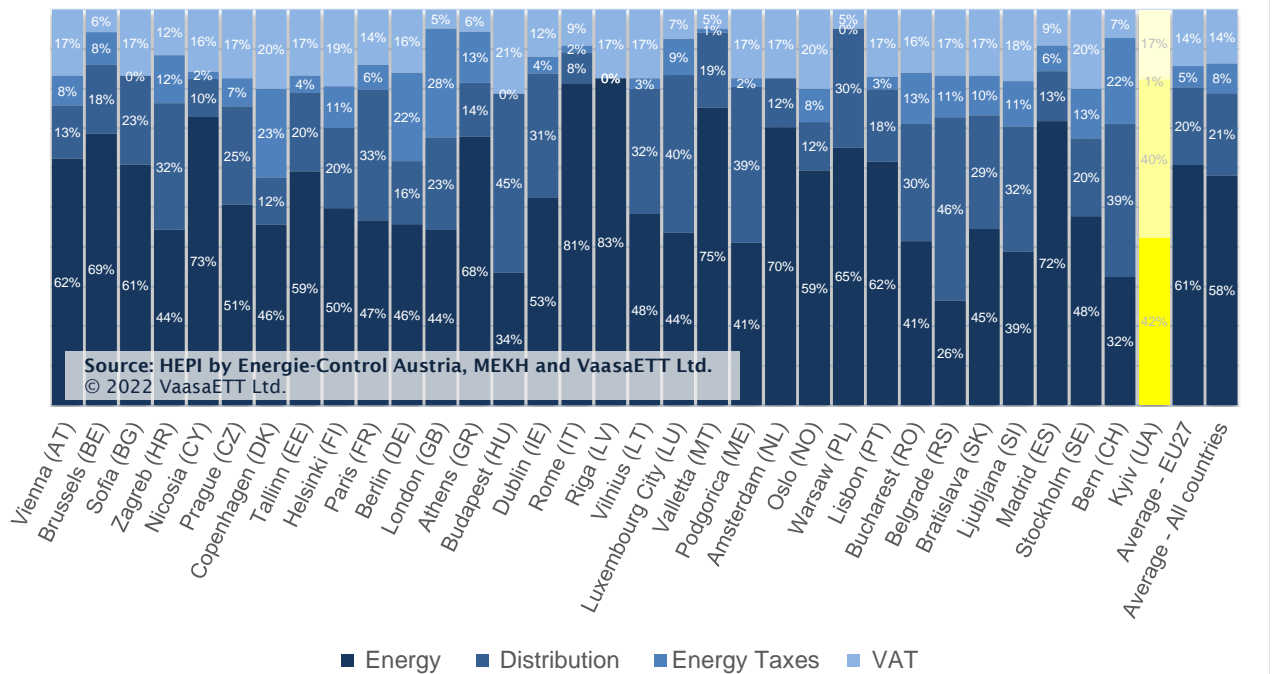


Figure 5: Residential electricity price breakdown⁹



⁹ 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 104%, distribution 18%, energy taxes -40%, and VAT 17%.

Figure 5 shows the breakdown of the electricity price in the 33 analysed capitals, into energy, distribution, energy taxes¹⁰ and VAT. Our survey shows that on average, energy (the contestable component of the price) represents 61% of the end-user price of electricity bill, distribution 20%, energy taxes 5% 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, Riga has the greatest energy percentage, reaching 83% of the end-user price in April 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 April 1st, 2022¹¹. The highest price is paid by inhabitants of Amsterdam who pay almost 2.5 times the European average end-user price and about 1.3 times as much as the inhabitants of the second most expensive city, Vienna. Stockholm is currently the third most expensive capital. 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 Stockholm¹².

The prices in Amsterdam are 11 times as high as in Budapest, which is the cheapest city for gas in EU, and over 12 times as high if we include Kyiv¹³. Even more pronounced than for electricity, household natural gas is cheapest in the CEE countries.

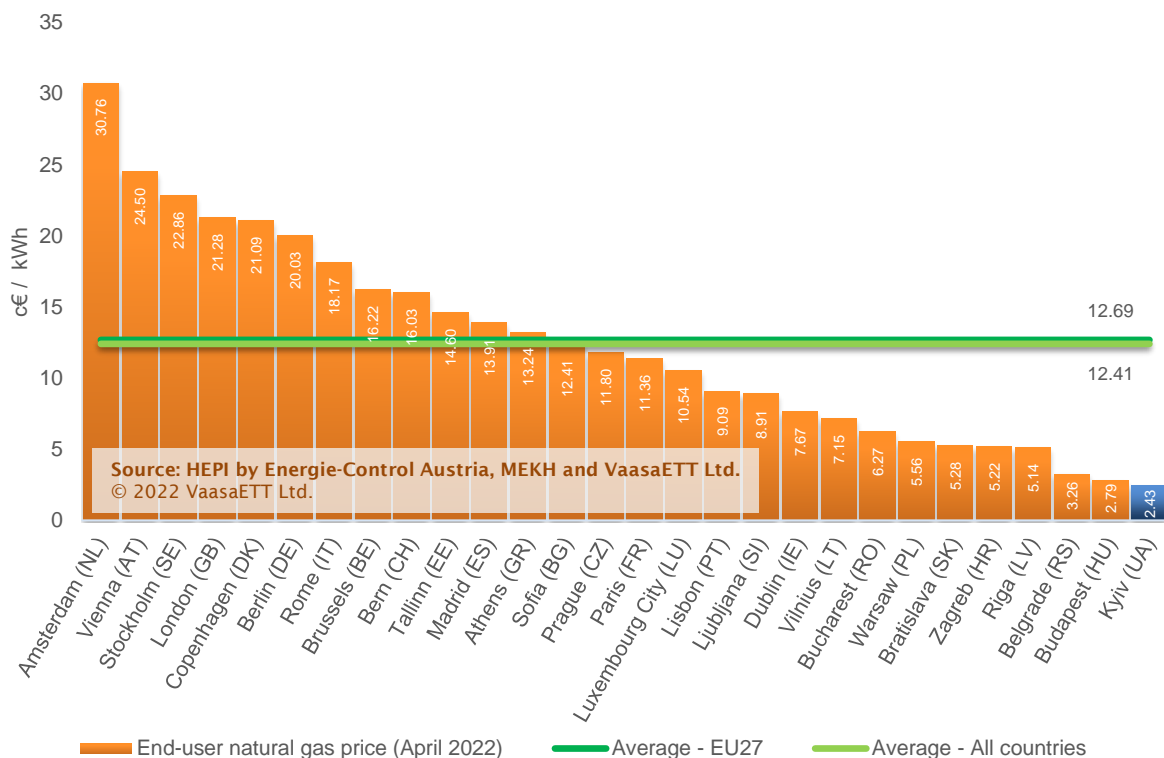
¹⁰ Energy taxes component is the sum of all the taxes, fees and levies.

¹¹ 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.

¹² The Swedish electricity and natural gas market 2019 Ei (Ei R2020:07).

¹³ 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 ¹⁴:

- A 78% price increase in Tallinn, due to increases in the energy and distribution components, related to the fact that the compensation scheme is no longer applied;
- A 66% price increase in Vienna, due to increases in the energy component and the energy taxes;
- A 55% price increase in London;
- A 37% price increase in Athens, due to increases in the energy, energy taxes and distribution components;
- A 21% price increase in Brussels, due to increases in the energy and distribution components;
- A 17% price increase in Sofia, due to an increase in the energy component;
- A 15% price increase in Zagreb, due to an increase in the energy component;
- A 14% price increase in Ljubljana, due to an increase in the energy component;
- A 14% price increase in Rome, due to increases in the energy and distribution components;
- A 13% price increase in Copenhagen, due to an increase in the energy component;
- A 9% price increase in Bern, due to an increase in the energy component;

¹⁴ The change in each capital city is calculated using the prices in their local currency to exclude the impact of exchange rate fluctuations.

- An 8% price increase in Lisbon, due to increases in the energy component and the energy taxes;
- A 7% price increase in Bucharest, due to increases in the energy and distribution components;
- A 7% price increase in Paris, due to an increase in the energy component;
- A 4% price increase in Madrid;
- A 4% price increase in Prague, due to an increase in the energy component;
- A 14% price decrease in Berlin, due to a decrease in the energy component;
- A 12% price decrease in Riga, due to a decrease in the energy component;
- A 10% price decrease in Amsterdam, due to a decrease in the energy component.

In the gas retail market, prices continued to rise, with Bern, Brussels, London, Madrid, Paris, Prague, Rome, Sofia, Tallinn and Vienna reaching new record-highs. Several measures taken by the European governments resulted in limiting the level of increase. However, the current prices remain incredibly high compared to the ones a year ago, reflecting 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.

The most striking increases for gas prices this month are observed in Tallinn and Vienna. The price rise for gas bills in Tallinn can be attributed to the expiration of several countermeasures prior adopted by the government³. Austria, on the other hand, faces energy price increases, as the country is highly dependent on Russian gas. In particular, the country imports 80% of natural gas from Russia.^{15,16}

A remarkable price rise is also observed in gas prices in the UK as a result of the updated price cap. Ofgem lifted the price cap by 54% this month, after the previous adjustment that occurred in October⁴. The latest increase in the price cap reflects the dynamics of the energy field in the country, as a combination of factors, such as the heavy reliance of the country on gas, surging wholesale prices, and low levels of gas storage¹⁷, drives the retail prices up.

Greek gas retail market showed a significant price increase this month, as the additional measures provided by the Greek government only limited the price surge¹⁸. Similarly, in Brussels¹⁹ and

¹⁵ Republic World: [“Russia-Ukraine war: Austrian Chancellor Says Country Will Reduce Reliance On Russian Natural Gas In Few Years”](#), 18.04.2022

¹⁶ The Local: [“Austria rejects embargo on Russian gas”](#), 05.04.2022

¹⁷ CNBC: [“Millions of Brits plunged into fuel poverty on Friday as household energy bills surge”](#), 01.04.2022

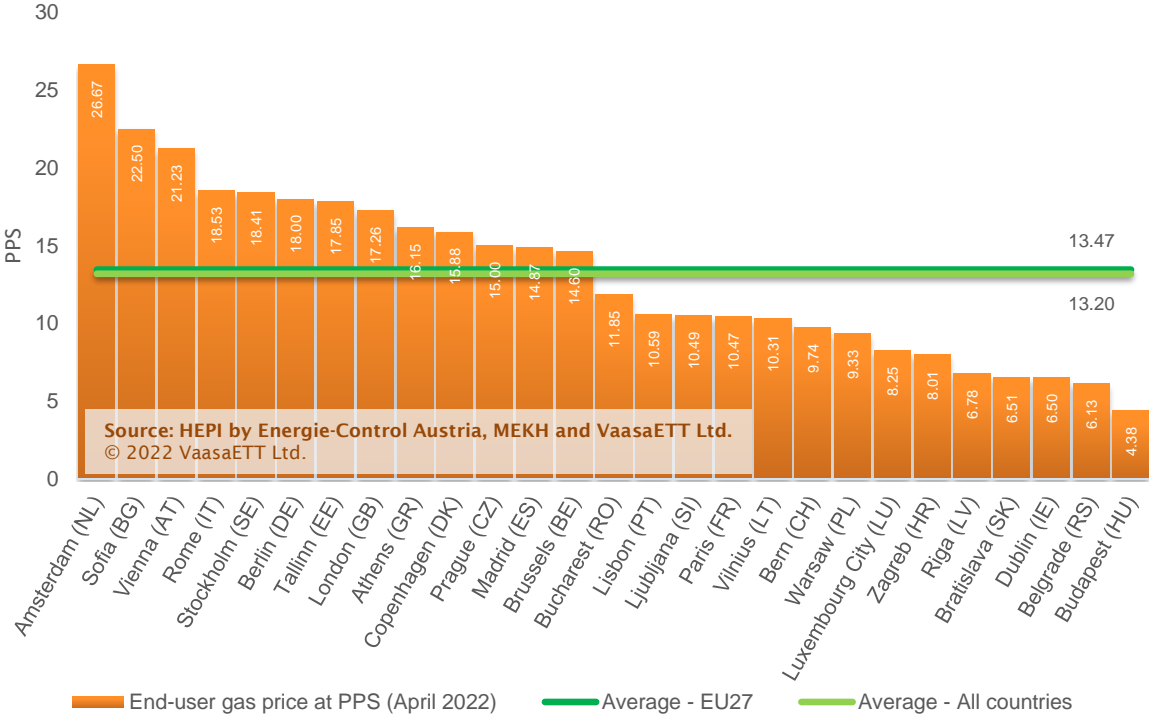
¹⁸ ERT: [“Gas: Doubling state subsidy in April for households and businesses”](#), 05.04.2022

¹⁹ The Brussels Times: [“Belgian government energy measures come into force on Friday”](#), 31.03.2022

Zagreb²⁰, the government interventions, such as the reduction of the VAT rate, only served as a temporary measure to limit the sharp price increase that was coming. Nonetheless, the average end-user price for natural gas in both cases increased, by 21% and 15% respectively compared to last month.

In contrary to the general increasing trend, price drops have taken place in Berlin, Riga and Amsterdam in April, in all cases following large increases that took place during last month. Despite this month’s decreases, prices in all three countries remain higher than in February 2022 (by 12%, 5% and 45% respectively).

Figure 7: Residential gas prices including taxes at PPS



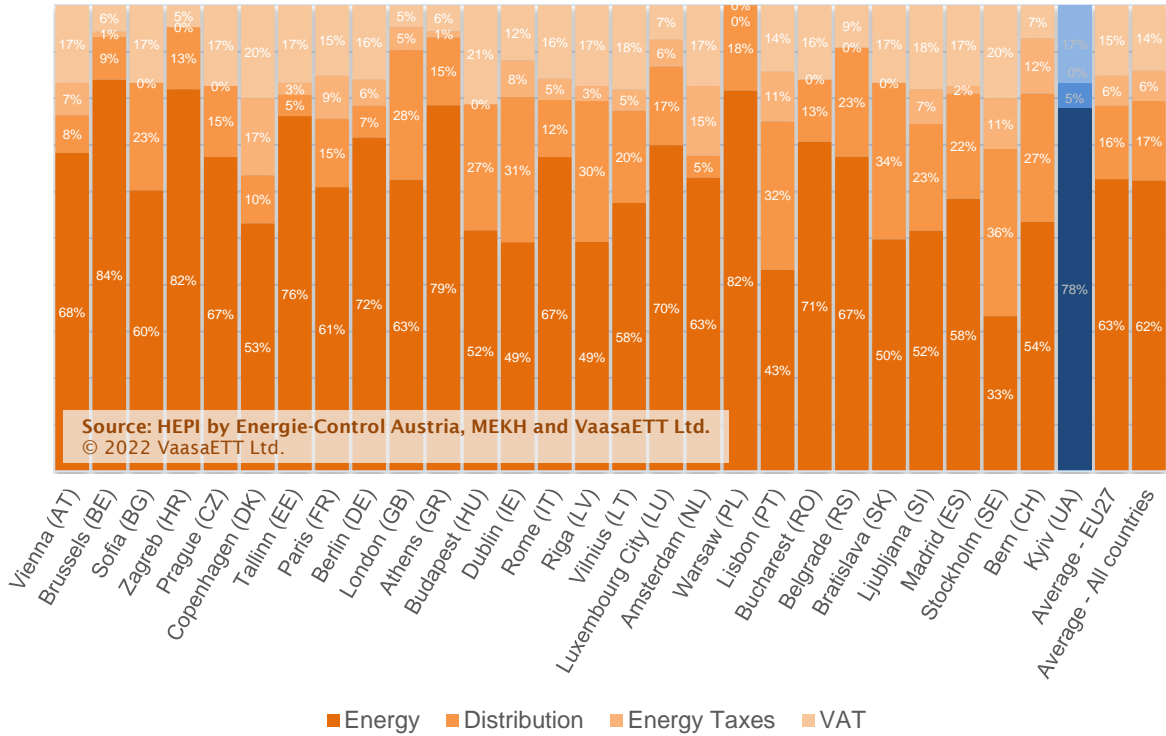
In the same vein as for electricity, gas prices at PPS offer a very different outcome from the actual prices. This month, Budapest, Belgrade and Dublin were the cheapest cities when adjusted to PPS (Figure 7).

Our survey shows that on average, energy (the contestable component of the price) represents 63% of the end-user price of natural gas, distribution 16%, energy taxes 6% 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

²⁰ HERA: “Obavijest”, 11.03.2022

user is typically 15%. The aim is to encourage the use of electric heating and appliances instead of gas.

Figure 8: Residential gas price breakdown²¹



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 April 2021.

In places where the energy component is lower, so is the incentive for customers to look for more competitive offers²². 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 decreased²³, especially for new customers.

²¹ Please note that proportions appearing in the graph are rounded, and due to this may not add up to 100%
²² 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.
²³ 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:

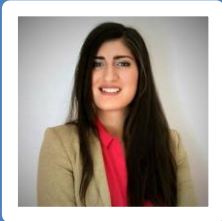
- The prices paid by customers on fixed price contracts agreed prior to the time of data collection
- The price paid by customers on tariff contracts set at a level no longer available at the time of data collection
- Sign in and other temporary bonuses and other forms of non-monetary benefits are not 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



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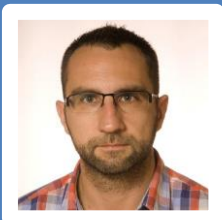


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Energie-Control Austria

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