

Household Energy Price Index for Europe

MARCH 1, 2022

February 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
Nicosia, Oslo, Paris, Prague and
Rome

Significant electricity price
decreases in Amsterdam,
Berlin, Bucharest, Helsinki and
Stockholm

Electricity price decreases in
Brussels, Copenhagen, London,
Madrid, Riga and Vienna

Natural gas price increase in
Rome

Significant natural gas price
decreases in Athens, Berlin and
Bucharest

Natural gas price decreases in
Amsterdam, Brussels,
Copenhagen, London, Paris,
Riga, Sofia, Vienna and Warsaw

European Energy Price Development

Figure 1 shows the evolution of residential energy and distribution prices excluding taxes between January 2009 and February 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 202 points.

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. After a sharp increase in January 2022 at an all-time high level, it currently stands at 219 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, February 2021, the electricity bills in all EU capitals have increased by 29% while the gas bills have increased by a staggering 64%.

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

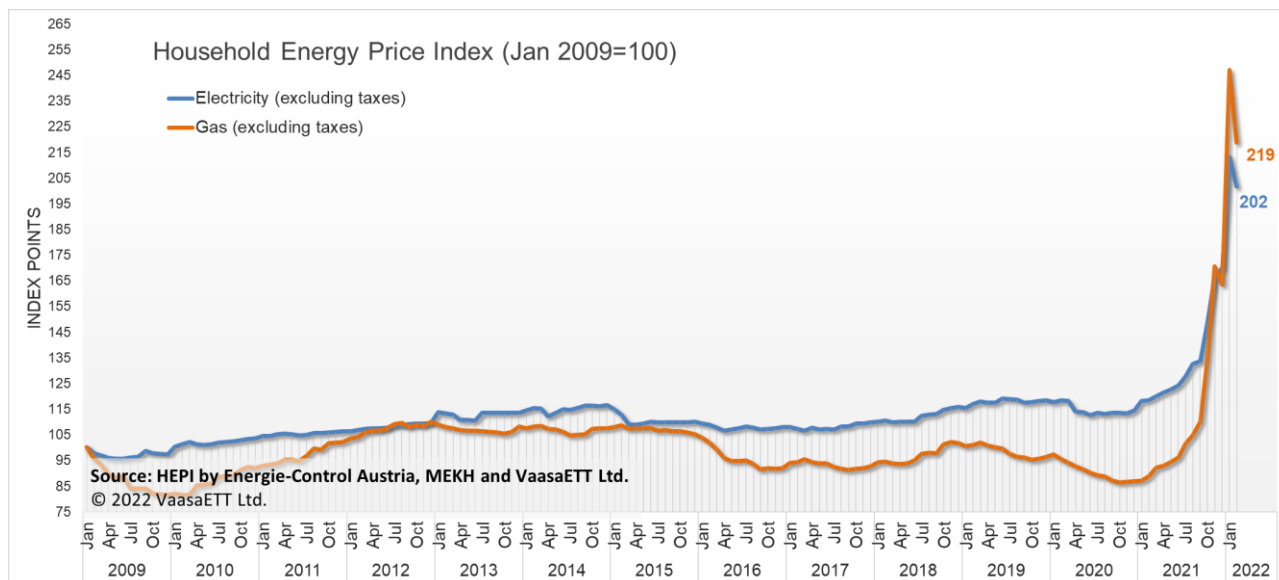
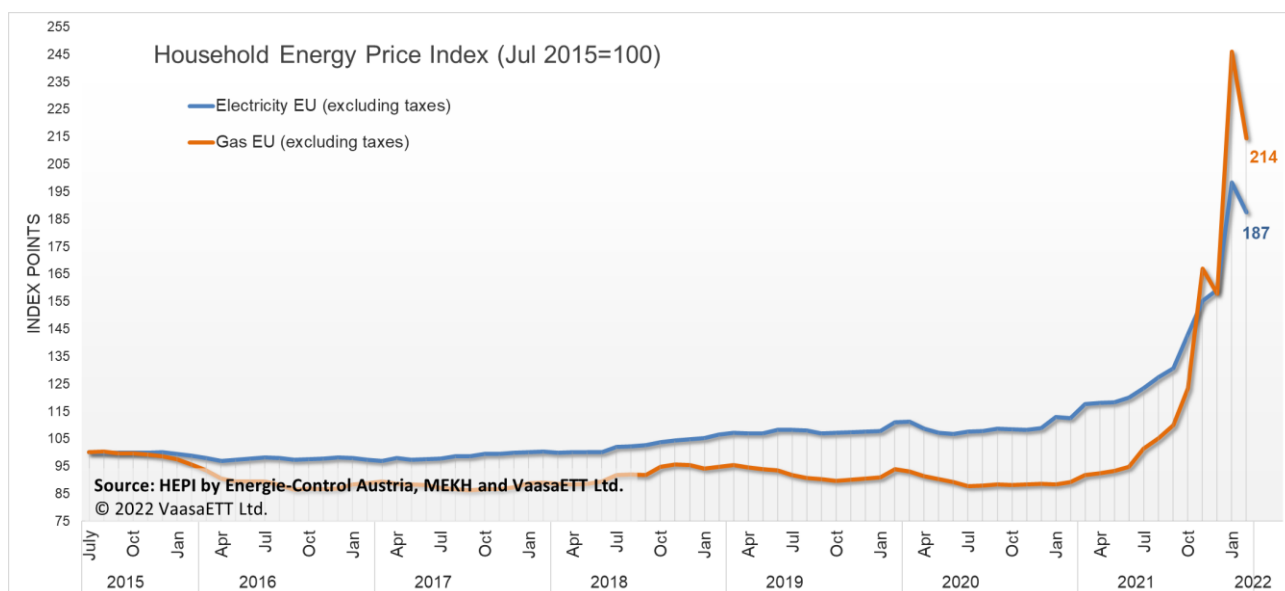


Figure 2: Evolution of residential energy and distribution prices excluding taxes in the EU¹



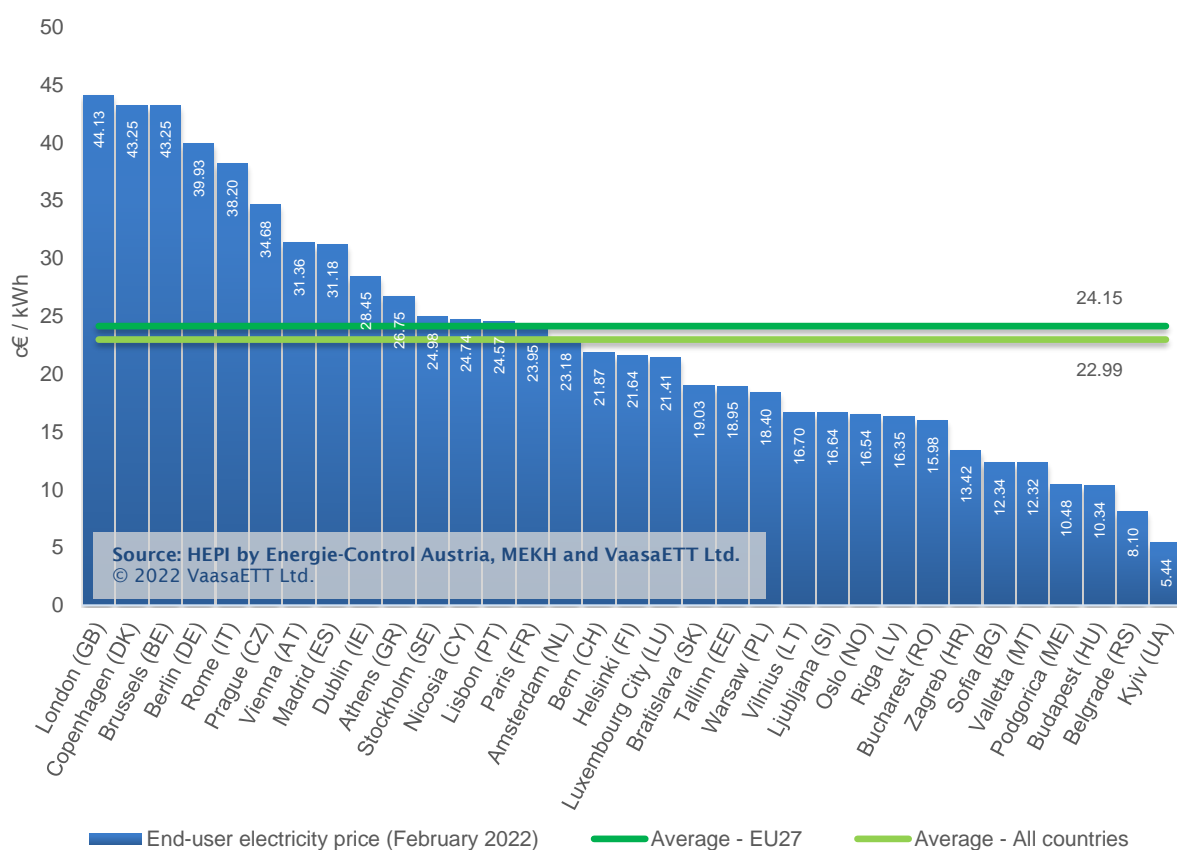
¹ EU-28 values were used between July 2015 - January 2020. EU-27 values are used from February 2020 onwards.

Residential Electricity Prices

Figure 3 shows the end-user price of electricity in the 33 European capital cities as of February 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 5.4. If we include Kyiv, the price varies by a ratio of 8.1. London and Copenhagen are by far the most expensive cities for household customers in Europe, followed by Brussels, Berlin and Rome.

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 is the only capital city 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 12% price increase in Rome, due to an increase in the energy component;
- A 7% price increase in Paris;
- A 3% price increase in Nicosia, due to the VAT rate exemption being ceased;
- A 3% price increase in Oslo, due to an increase in the energy component;
- A 2% price increase in Prague, due to increases in the energy component and the energy taxes;
- A 23% price decrease in Amsterdam, due to a decrease in the energy component;
- A 21% price decrease in Bucharest, due to lower price caps level applied this month;
- A 20% price decrease in Berlin, due to a decrease in the energy component;
- A 18% price decrease in Stockholm, due to a decrease in the energy component;
- A 17% price decrease in Helsinki, due to a decrease in the energy component;
- A 7% price decrease in London;
- A 7% price decrease in Copenhagen, due to a decrease in the energy component;
- A 6% price decrease in Brussels, due to a decrease in the energy component;
- A 3% price decrease in Riga, due to a decrease in the energy component;
- A 3% price decrease in Madrid, due to a decrease in the energy component;
- A 1% price decrease in Vienna, due to decreases in the energy component and the energy taxes.

A general decreasing trend has been noticed in the European residential electricity prices this month. The general price decrease in most of the cities can be attributed to the measures applied by the national governments to alleviate the effects of the energy crisis on the household bills, a reflection of January wholesale price decreases or the return to more “normal” price levels after extreme December increases. Nevertheless, the prices remain significantly high compared to the ones a year ago, driven by 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.

Despite this month’s decreasing trend, the governmental measures have not managed to stop the increasing pattern in some of the cities studied and new high record prices have reached again in Athens, Bern, Nicosia, Paris, Prague and Rome. Italy reduced green surcharges and cut taxes on gas to control the increase in household energy prices². However, due to the heavy reliance of the Italian

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

² Euronews: “[Cost of living crisis: What are European countries doing to avoid soaring energy bills?](#)”, 03.02.2022

electricity sector on natural gas, energy prices continued to rise during February^{3,4}. Similarly, in Cyprus, household electricity prices hit a new all-time high, although the government has applied a 10% discount on all household electricity bills since November⁵. France reduced one of the electricity taxes, the TICFE (CSPE), to keep the increase of regulated electricity tariffs to 4% including tax; in February, the tax went down to 1 Euro/MWh for households against 25.8291 in January⁶. Energy suppliers in Czech Republic have announced increased energy prices. Meanwhile, during the last year, 12 Czech suppliers have stopped trading electricity and gas; as a result, many customers of the failed energy companies ended up with other suppliers under the last resort regime⁷.

Many countries have kept the energy prices down by reducing or cutting taxes in electricity bills. While measures are already in force in numerous countries since January 2022 or - in some cases - late autumn, there have been some updates since February 2022. In Netherlands, the energy tax for households has been reduced for 2022⁵. Spain has reduced several taxes and aims to raise money for subsidising household bills by imposing a tax to the energy companies that saw their profits increasing significantly due to the high energy prices². The Romanian government applied a price cap according to which no customer should pay more than 0.8 lei/kWh for electricity, regardless of the level of consumption⁸.

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

³ Euractiv: "[Italian gas, electricity prices surge despite government interventions](#)", 16.02.2022

⁴ ISPI: "[Energy crisis: is Italy different?](#)", 18.02.2022

⁵ Bruegel: "[National policies to shield consumers from rising energy prices](#)", 08.02.2022

⁶ Energie-Info: "[Regulated electricity tariffs increase by 4% including tax on February 1, 2022](#)", 31.01.2022

⁷ TNCZ: "[Energy suppliers have announced an increase. Prices will rise by a quarter this year](#)", 13.02.2022

⁸ Europa Libera Romania: "[Larger reductions in energy prices and a new level of fines for suppliers who do not apply them](#)", 25.01.2022

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

Figure 4: Residential electricity prices including taxes at PPS

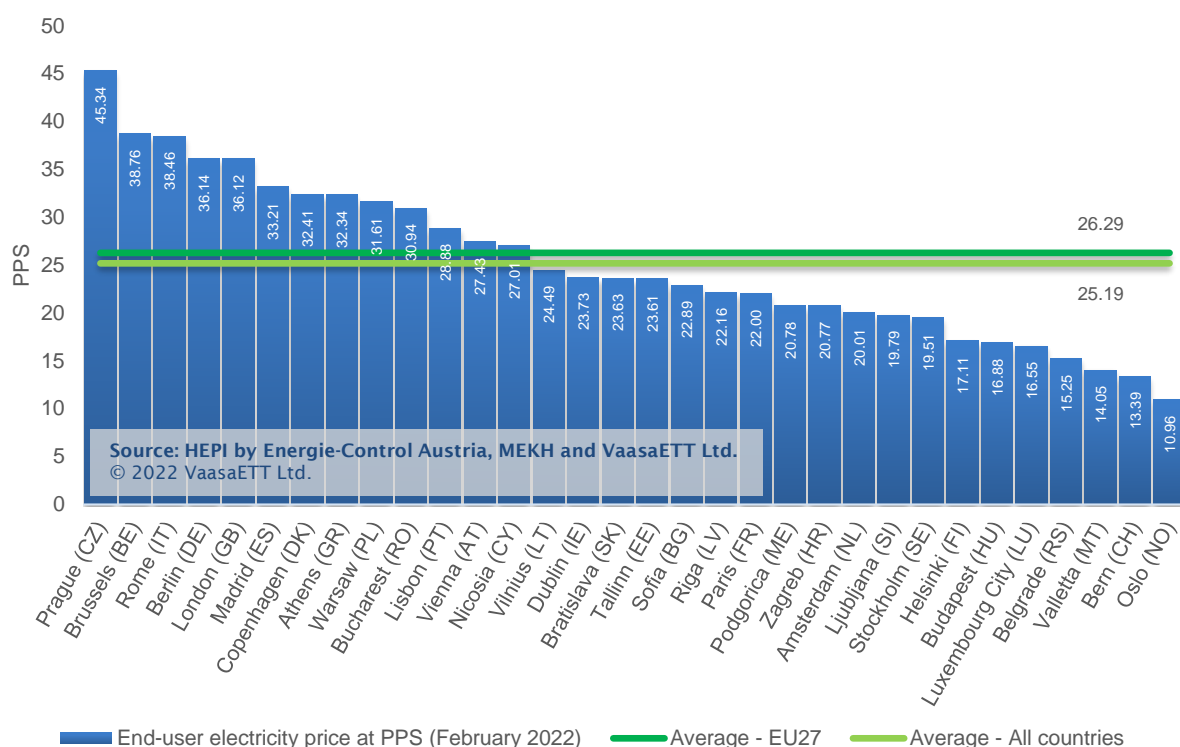
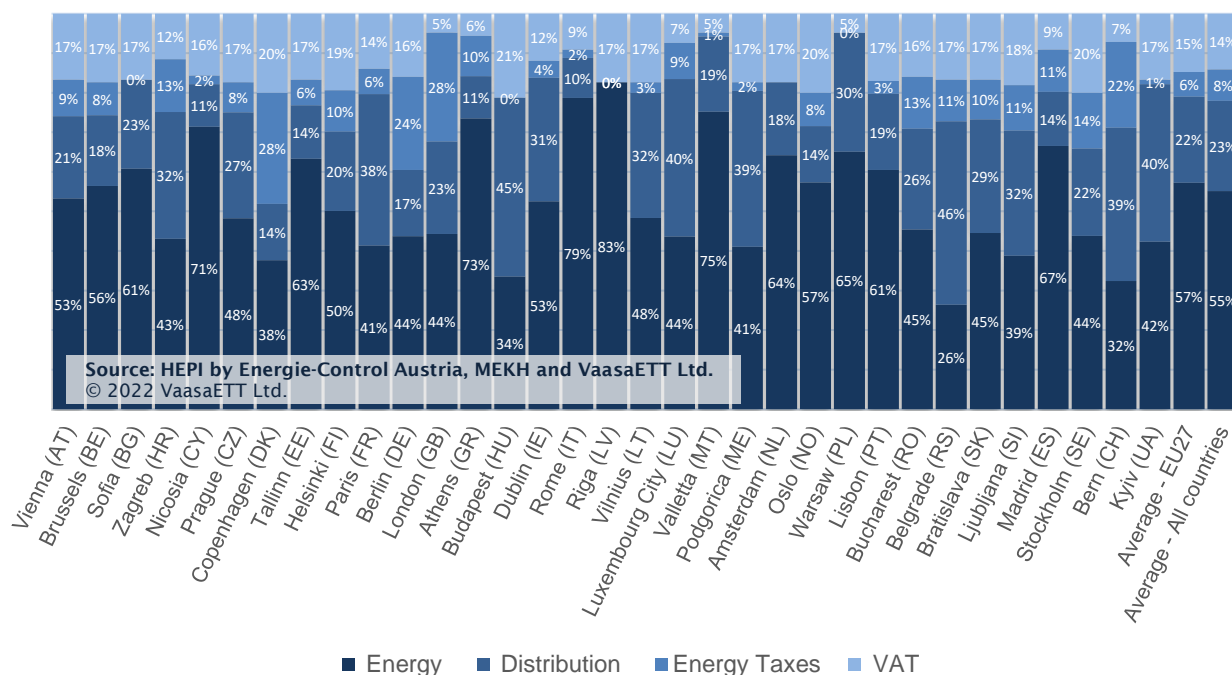


Figure 5: Residential electricity price breakdown¹⁰



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 72%, distribution 24%, energy taxes -13%, 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 57% of the end-user price of electricity bill, distribution 22%, energy taxes 6% and VAT 15% for the European capitals.

Copenhagen is a very unusual case; the cost of energy as a commodity represents just 38% of the end-user electricity price, the fourth lowest of all surveyed cities, whereas the energy taxes represent an astonishing 28% (over four times Europe's average) and 48% 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, Riga has the greatest energy percentage, reaching 83% of the end-user price in February 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 February 1st, 2022¹². The highest price is paid by inhabitants of Stockholm who pay over twice the European average end-user price and about as much as the inhabitants of the second most expensive city, Amsterdam. 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, while Berlin stands at the fourth place of the most expensive capitals.

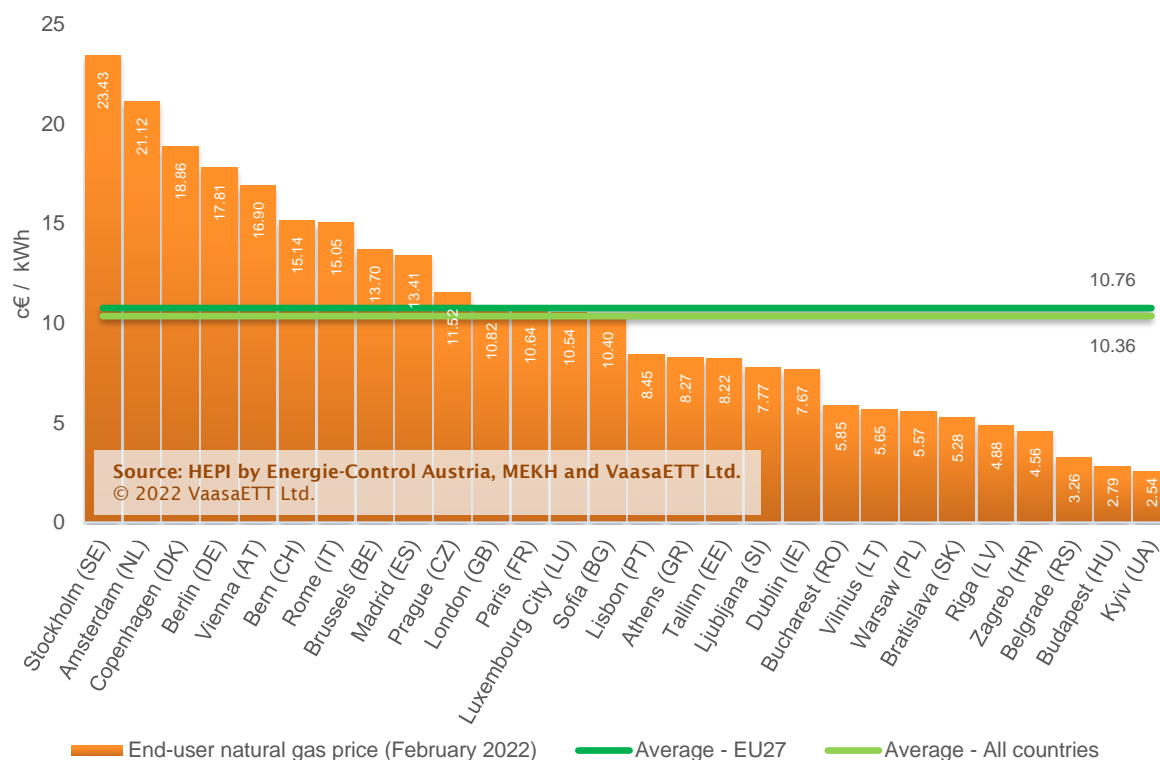
The prices in Stockholm are over 8 times as high as in Budapest, which is the cheapest city for gas in EU, and over 9 times as high if we include Kyiv. Even more pronounced than for electricity, household natural gas is cheapest in the CEE countries.

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).

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 2% price increase in Rome, due to an increase in the energy component;
- A 25% price decrease in Athens, due to decreases in the energy component, the energy taxes and the distribution component;
- A 23% price decrease in Berlin, due to a decrease in the energy component;
- A 17% price decrease in Bucharest, due to lower price cap level applied this month;
- A 13% price decrease in Amsterdam, Brussels and Copenhagen, due to decreases in their energy components;
- A 12% price decrease in Sofia, due to a decrease in the energy component;
- A 7% price decrease in Warsaw, due to the VAT exemption coming to effect;
- A 4% price decrease in London;
- A 3% price decrease in Vienna, due to decreases in the energy component and the energy taxes;
- A 2% price decrease in Riga, due to a decrease in the energy component;
- A 1% price decrease in Paris.

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

The decreasing trend that was observed in the electricity market, was also noticed in the gas retail prices during February. This decrease came mainly as a result of several measures taken by European governments to stop the rise of prices or the return to more “normal” price levels after extreme December increases. Nevertheless, 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.

Governmental measures have been announced and taken in numerous countries, in order to lower gas bills. In February, the Greek government subsidised the gas bills with 20 euros per MWh for all the households, regardless of the level of consumption or other criteria¹⁵. In France, the regulated gas tariff has been frozen; the measure was initially effective until April 2022, but it was extended until the end of 2022⁵. Bulgaria has frozen electricity and gas prices until the end of March 2022². The Romanian government has capped the gas price, so that no customer pays more than 0.31 lei/kWh for gas, regardless of the level of consumption⁸.

The second biggest decrease for this month in the natural gas market, a 23% decrease in Berlin gas price, has come after following a 133% increase during January. Hence, the price remains 182% higher in comparison with February 2021.

¹⁵ Taxheaven: “[Electricity and gas subsidy for February - RIS new measures](#)”, 09.02.2022

Figure 7: Residential gas prices including taxes at PPS

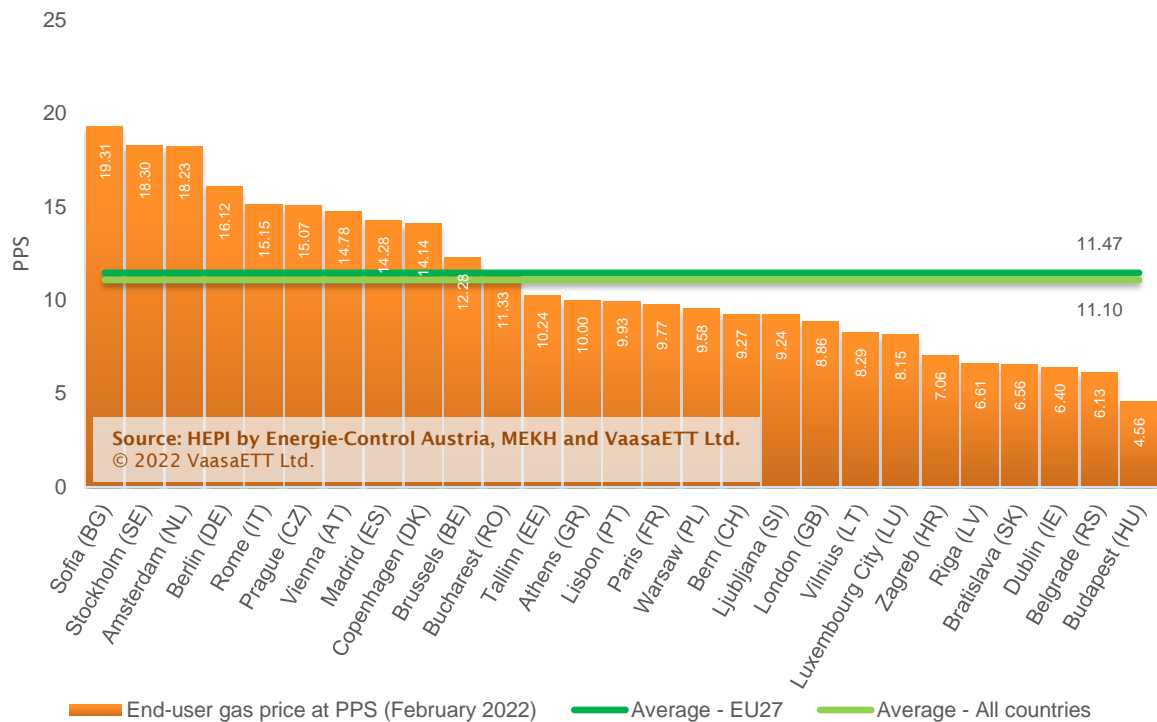
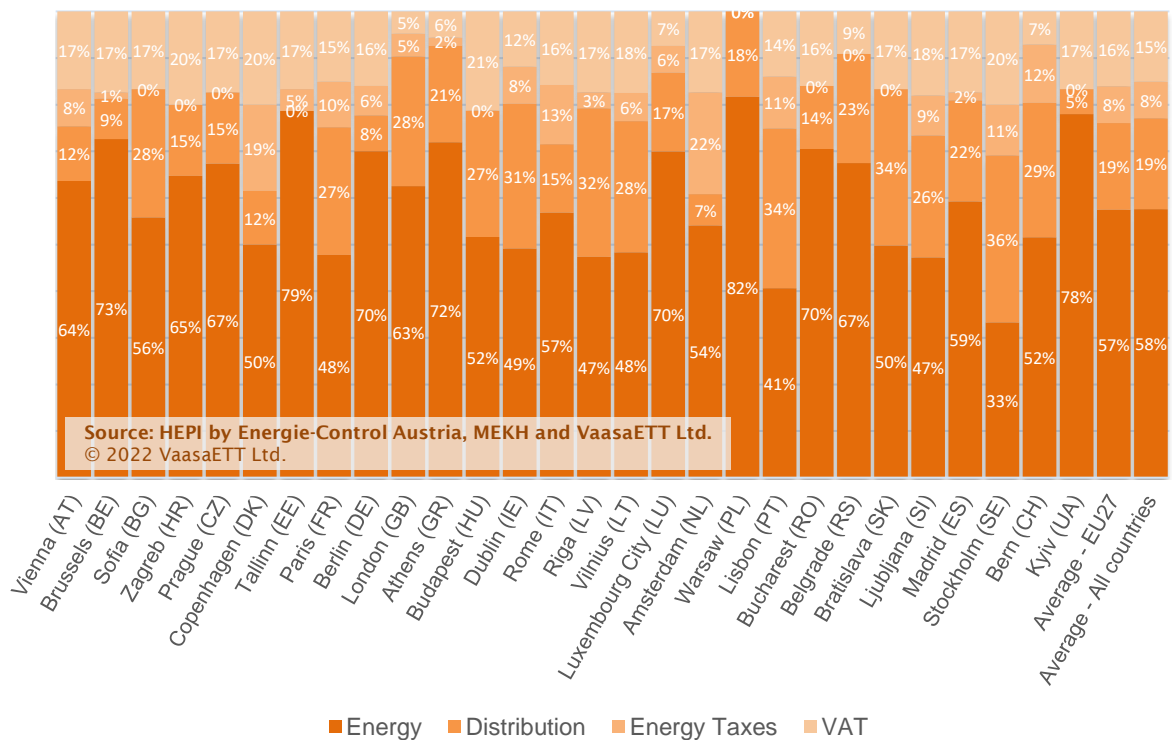


Figure 8: Residential gas price breakdown¹⁶



¹⁶ 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 57% of the end-user price of natural gas, distribution 19%, energy taxes 8% 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 22%. 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 offers¹⁷.

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

¹⁷ 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.

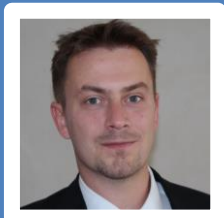
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Energie-Control Austria

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