Household Energy Price Index for Europe

NOVEMBER 2, 2021

October 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

Electricity price increases in Amsterdam, Athens, Brussels, Bucharest, Copenhagen, Helsinki, Lisbon, London, Luxembourg City, Madrid, Nicosia, Oslo, Prague, Riga, Stockholm, Tallinn and Vienna

Electricity price decreases in Bratislava, Dublin and Rome

Significant natural gas price increases in Brussels, Bucharest, London and Luxembourg City

Natural gas price increases in Amsterdam, Athens, Berlin, Bern, Copenhagen, Lisbon, Paris, Prague, Riga, Rome, Sofia, Vienna and Warsaw

Stories of the month

"UK consumers and suppliers face hardships as energy prices soar"

"European Commission's toolbox against the energy price surge"

European Energy Price Development

Figure 1 shows the evolution of residential energy and distribution prices excluding taxes between January 2009 and October 2021 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 has shown an increasing trend and it currently stands at the record-high level of 148 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 and reaching 136 index points in October 2021.

When examining the averages of the end-user prices for both electricity and gas, the following changes can be observed; from a year ago, October 2020, the electricity bills in all EU capitals have increased by 18% while the gas bills have increased by 34%.

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

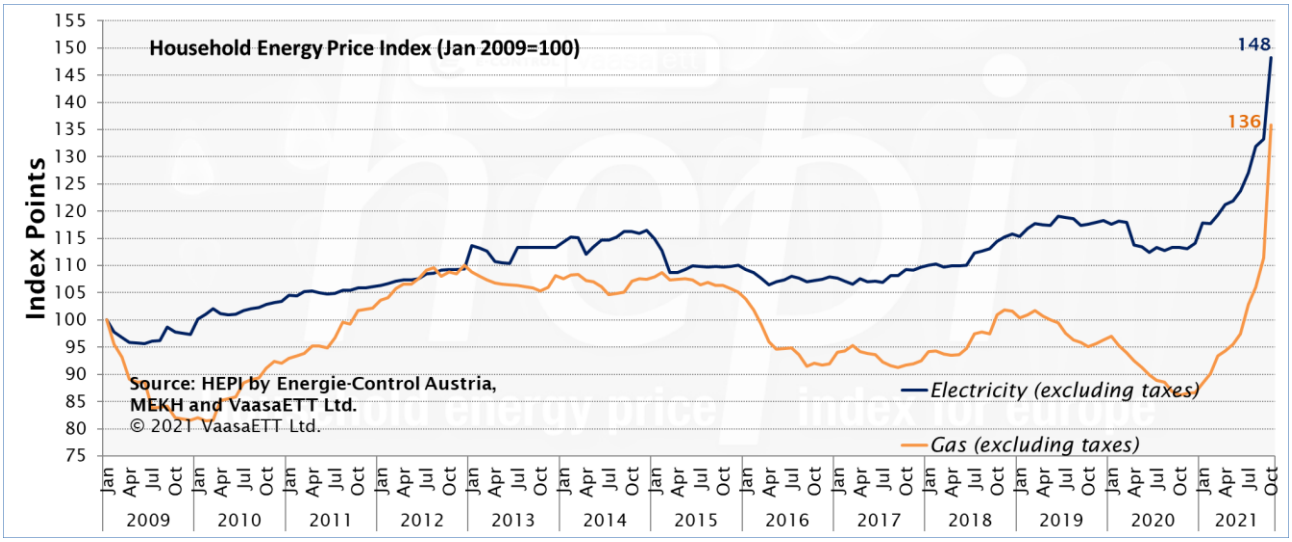
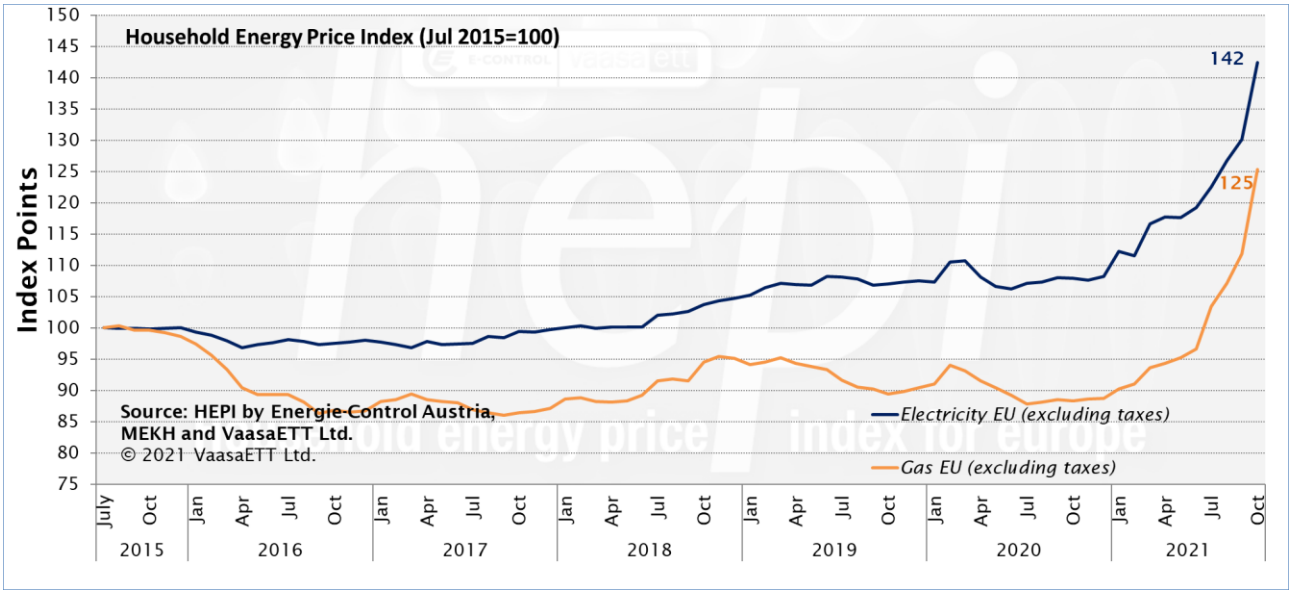


Figure 2 Evolution of residential energy and distribution prices excluding taxes in the EU[1]



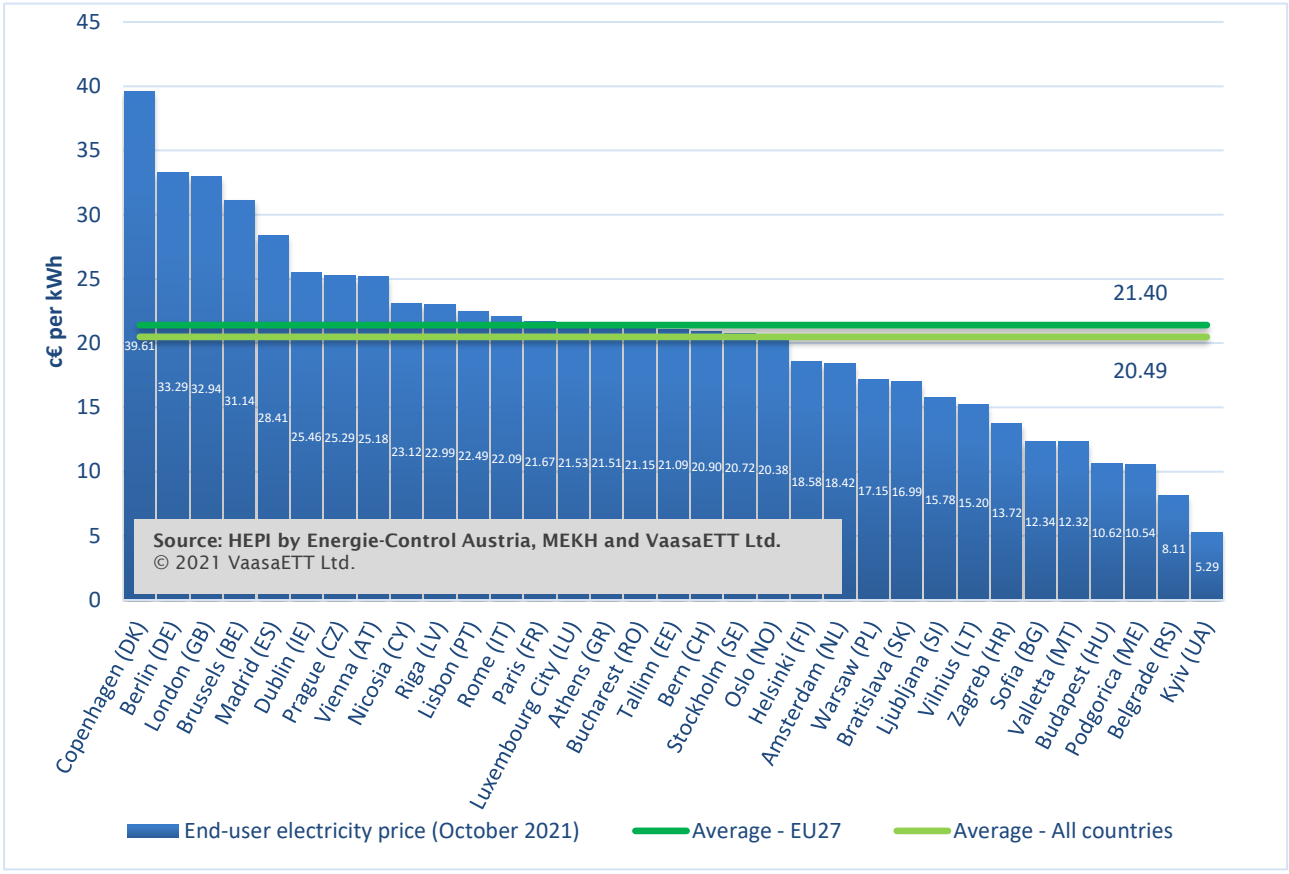
[1] EU-28 values were used between July 2015 - January 2020. EU-27 values are used from February 2020 onwards.

Residential Electricity Prices

Figure 3 shows the end-user price of electricity in the 33 European capital cities as of October 1st, 2021. It shows that depending on where a customer lives in Europe, the price that a customer pays can vary by a ratio of 4.9. If we include Kyiv, the price varies by a ratio of 7.5. Copenhagen and Berlin are by far the most expensive cities for household customers in Europe though the price of energy represents only a small portion of the total price, the lion's share being tax, in fact.

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

Figure 3 Residential electricity prices including taxes



The most significant changes that took place in the electricity market this month were as follows[1]:

- A 24% price increase in Riga, due to an increase in the energy component;
- A 22% price increase in Oslo, due to an increase in the energy component;
- A 21% price increase in Brussels, due to an increase in the energy component;
- A 19% price increase in London;
- A 15% price increase in Bucharest, due to an increase in the energy component;
- A 14% price increase in Copenhagen, due to increases in the energy and distribution components;
- A 11% price increase in Tallinn, due to an increase in the energy component;
- A 10% price increase in Helsinki, due to an increase in the energy component;
- A 9% price increase in Madrid, due to an increase in the energy component;
- A 7% price increase in Vienna, due to increases in the energy component and the energy taxes;
- A 6% price increase in Nicosia, due to an increase in the energy component;
- A 4% price increase in Athens, due to an increase in the energy component;
- A 3% price increase in Luxembourg City, due to an increase in the energy component;
- A 2% price increase in Stockholm, due to an increase in the energy component;
- A 1% price increase in Amsterdam and Prague, due to increases in their energy components;
- A 1% price increase in Lisbon, due to an increase in the energy component;
- A 3% price decrease in Dublin, due to a decrease in the energy taxes;
- A 2% price decrease in Bratislava, due to a decrease in the energy component;
- A 1% price decrease in Rome, due to a decrease in the energy taxes.

In general, the upward trend in European energy prices continued this month, resulting in substantial increases, while about 2/3 of the capital cities studied are standing once again at record high prices. Specifically, those would be Athens, Belgrade, Bern, Brussels, Bucharest, Copenhagen, Helsinki, Kyiv, London, Luxembourg City, Madrid, Oslo, Paris, Prague, Riga, Sofia, Stockholm, Tallinn, Valletta, Vienna and Vilnius. The continuous upward trend is attributed again 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 (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.

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

Several governments have been taking measures, in line with European Commission's recommendations, to protect consumers from unaffordable price hikes, however, in many cases the impact has not been significant from a consumer perspective, as governments' interventions resulted mainly on mitigating further price increases and were less successful on reducing household energy bills[2,3]. On the other hand, Dublin and Rome are two examples where the governmental measures, applied as reductions on the energy taxes, also succeeded in decreasing households' electricity bills.

Soaring electricity prices in the last months led to a new record high end-user price in Riga[4], for the third month in a row. Except for consumers, some suppliers also experience difficulties fulfilling their duty because of the high wholesale prices, unable to operate in profit. The first electricity supplier to leave the market was Senergo, forcing its customers to search for an alternative supplier or else be supplied by the supplier of last resort at a higher price.

[2] Euronews: "Why Europe's energy prices are soaring and could get much worse", 28.10.2021
[3] Reuters: "EU's power market proposals not enough to curb prices - Spain", 13.10.2021
[4] Apollo: "Kāpēc strauji palielinās elektroenerģijas cenas un kad tās varētu kristies? Atbild uzņēmumi "Latvenergo" un "Enefit", 08.10.2021

UK consumers and suppliers face hardships as energy prices soar

UK is strongly affected by the wholesale energy prices rally that has been observed in the past months across Europe, experiencing a 75% average monthly increase between August-September 2021, the highest in the European market. The main reasons for this are the country's high dependence on natural gas (85% of households use gas for heating and 1/3 of country's electricity generation uses natural gas), the shortage of RES production due to the least windy summer since 1961 and the recent interconnector issue interrupting power supply from France.

As a result, 14 suppliers have exited the retail market recently, unable to find a way forward amid rising costs due to the increasing wholesale prices, while there are concerns that more could follow before the end of the year. Ofgem, however, is securing all consumers' seamless energy supply by transferring those left without a supplier to another company or the supplier of last resort.

The price cap, a governmental scheme which protects consumers under standard variable or default contracts, has been set to its highest ever level starting from 1 October 2021, that is 12% higher compared to the previous price cap and will be reviewed again by Ofgem in six months. Following this increase, the country's biggest suppliers have already announced price increases on their standard offers to the maximum price allowed. Meanwhile, fixed contracts have skyrocketed and thus suppliers and price comparison tools advise consumers to stay on their current contracts, especially if they are on fixed deals concluded before the recent months' hike, while there are even cases that suppliers have announced that they currently do not accept any new customers. Hence, although the price cap has only increased by 12%, the extinction of cheap fixed contracts from the market has led to increases as high as 19% and 51% for typical residential electricity and natural gas customers, respectively.

Author: **Ioannis Korras,** Energy Market Analyst

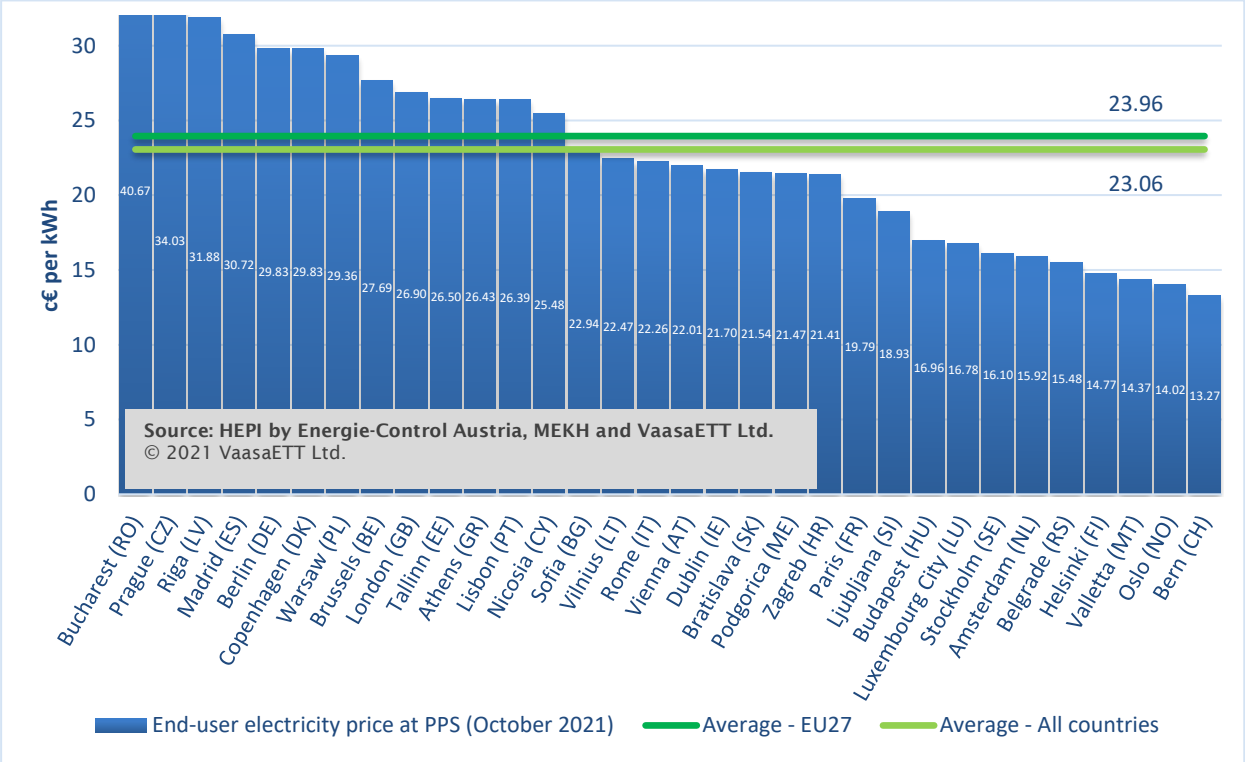
Sources:

[1] Uswitch: "What's happening in the energy market? Your questions answered.", 01.10.2021

[2] BBC: "Why are gas prices so high and what is happening to fuel bills?", 12.10.2021

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 Bern, Oslo, Valletta and Helsinki and while the highest are currently in Bucharest, Prague, Riga and Madrid. Half of CEE countries end up with electricity prices which are relatively high compared to the general level of prices in the country and above the European average (Figure 4).

Figure 4 Residential electricity prices including taxes at PPS



Copenhagen is a very unusual case; the cost of energy as a commodity represents just 33% of the end-user electricity price, the third lowest of all surveyed cities, whereas the energy taxes represent an astonishing 31% (about three times Europe's average) and 51% if we include VAT. A similar case is Berlin where since the introduction of the *Energiewende*, the energy tax component represents 37% of the end-user price of electricity, while the cost of energy as a commodity represents just 23% of the end-user electricity price, which is the lowest among all surveyed cities.

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.

European Commission's toolbox against the energy price surge

A set of short- and medium-term policy measures have been presented by the European Commission that would allow the national governments to protect the consumers from the soaring electricity and natural gas prices.

The immediate measures include income support for vulnerable citizens through vouchers, partial bill payments or temporary deferral of bill payments, safeguards to ensure that households will stay connected to the electricity network and temporary reductions in taxation rates on the benefit of vulnerable consumers. When it comes to commercial customers, the provision of aid to companies was suggested, according to the EU state aid rules. Moreover, it was mentioned that the EC will be taking under consideration, after proposals of EU members, a joint gas purchasing mechanism among all EU countries to better control and mitigate price spikes.

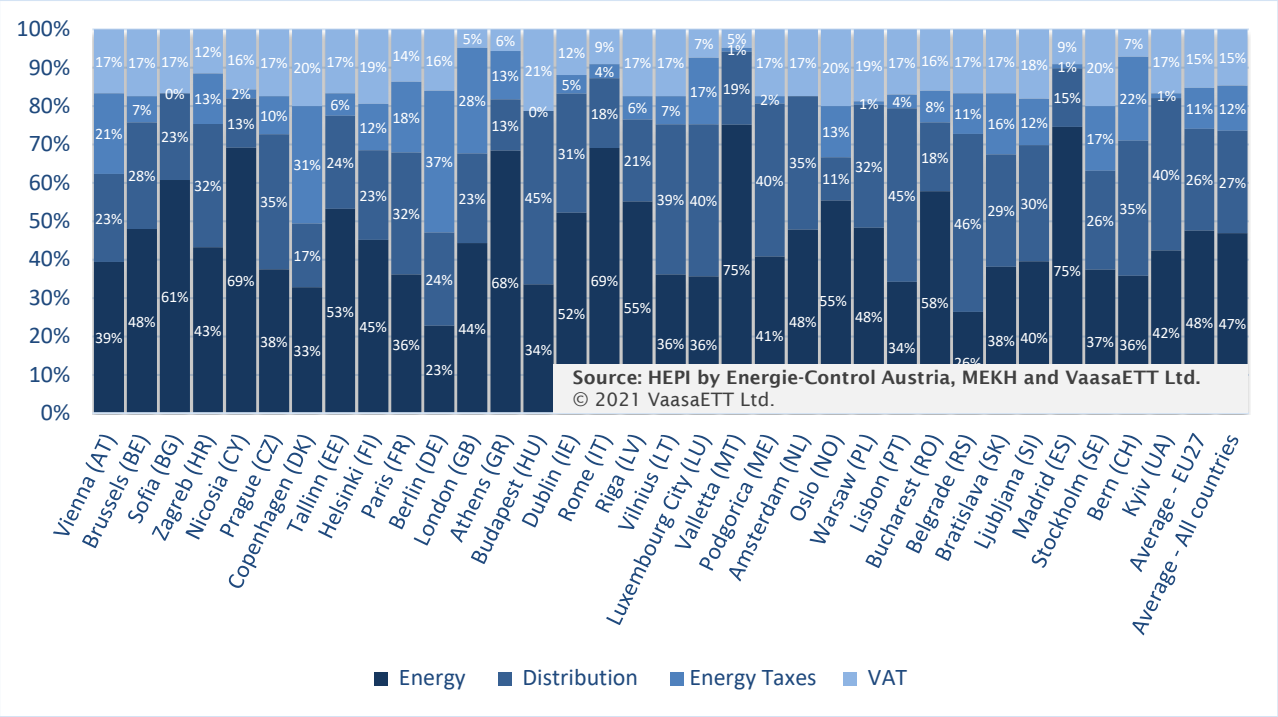
Any unfair market practices and developments in the carbon market should be closely investigated and monitored through the European Securities and Markets Authority (ESMA). At the same time, the governments are urged to work towards the enhancement of international energy outreach and the wider access to renewable power purchase agreements.

Commission's recommendations aim to facilitate the clean energy transition, replace fossil fuels with renewables and prevent similar price volatility in the future. The toolbox contains more medium-term measures, such as the acceleration of investments in renewable energy sources, the development of energy storage capacity and the exploration of possible benefits by joint procurement programs for gas reserves between member states.

Author: **Anastasia Papageorgiou,** Journalist

Sources:
[1] European Commission: "Energy prices: Commission presents a toolbox of measures to tackle exceptional situation and its impacts", 13.10.21
[2] Reuters: "Gas reserves, subsidies and tax cuts: EU's tools to combat energy price spike", 13.10.21

Figure 5 Residential electricity price breakdown[5]



Residential Gas Prices

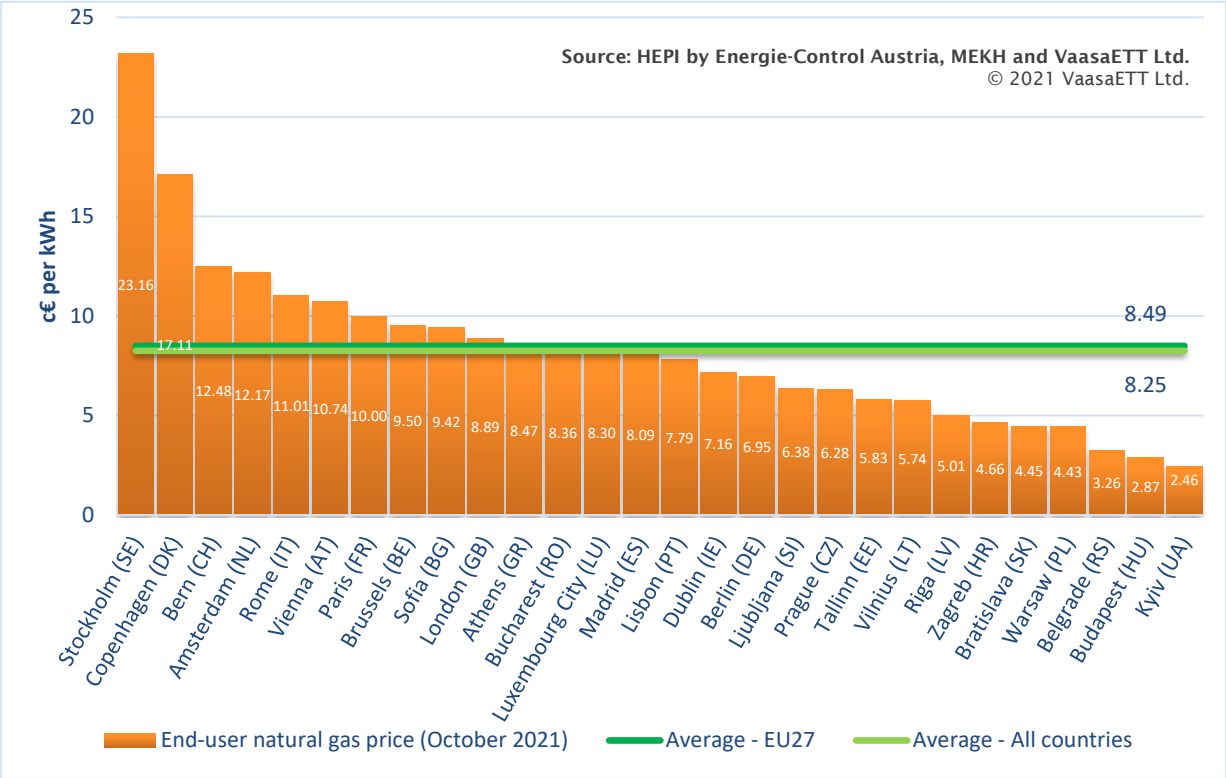
Figure 6 shows the price of natural gas paid typically by residential customers in 28 European capital cities as of October 1st, 2021[6]. The highest price by very far is paid by inhabitants of Stockholm who pay almost three times the European average end-user price and about 1.4 times as much as the inhabitants of the second most expensive city, Copenhagen. 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 Stockholm[7]. Bern is currently the third most expensive capital, while Amsterdam has a slightly lower price, standing at the fourth place of the most expensive capitals.

[5] 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 62%, distribution 45%, energy taxes -24%, and VAT 17%.

[6] 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.

[7] The Swedish electricity and natural gas market 2019 Ei (Ei R2020:07).

Figure 6 Residential gas prices including taxes



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.

The most significant changes that took place in the natural gas market this month were as follows [8]:

- A 51% price increase in London;
- A 44% price increase in Luxembourg City, due to an increase in the energy component;
- A 37% price increase in Bucharest, due to an increase in the energy component;
- A 33% price increase in Brussels, due to an increase in the energy component;
- A 24% price increase in Copenhagen, due to increases in the energy and distribution components;
- A 22% price increase in Vienna, due to increases in the energy component and the energy taxes;
- A 20% price increase in Sofia, due to an increase in the energy component;
- A 15% price increase in Athens, due to increases in the energy component and the energy taxes;

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

- A 14% price increase in Paris;
- A 13% price increase in Rome, due to increases in the energy and distribution components;
- An 8% price increase in Bern, due to an increase in the energy component;
- A 5% price increase in Lisbon, due to increases in the energy component and the energy taxes;
- A 5% price increase in Warsaw, due to an increase in the energy component;
- A 4% price increase in Riga, due to an increase in the energy component;
- A 2% price increase in Amsterdam, due to an increase in the energy component;
- A 1% price increase in Prague, due to an increase in the energy component;
- A 1% price increase in Berlin.

The ongoing upward trend in European end-user prices was more distinct in the natural gas market this month, resulting in major increases while about half of the capital cities studied are standing once again at record high prices. Specifically, those would be Amsterdam, Athens, Bern, Brussels, Bucharest, Copenhagen, London, Luxembourg City, Paris, Prague, Rome, Sofia and Vienna. 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.

Some markets have already announced further large price rises for November, e.g. a 30% increase will take place in the wholesale price of gas in Bulgaria[9], a 17% increase in end-user price was announced by EWB for household customers in Bern. In Romania, price increases of ongoing fixed contracts have led ANRE[10] into fining some suppliers for unfair commercial practices, due to the lack of transparency on their right to adjust ongoing contract prices.

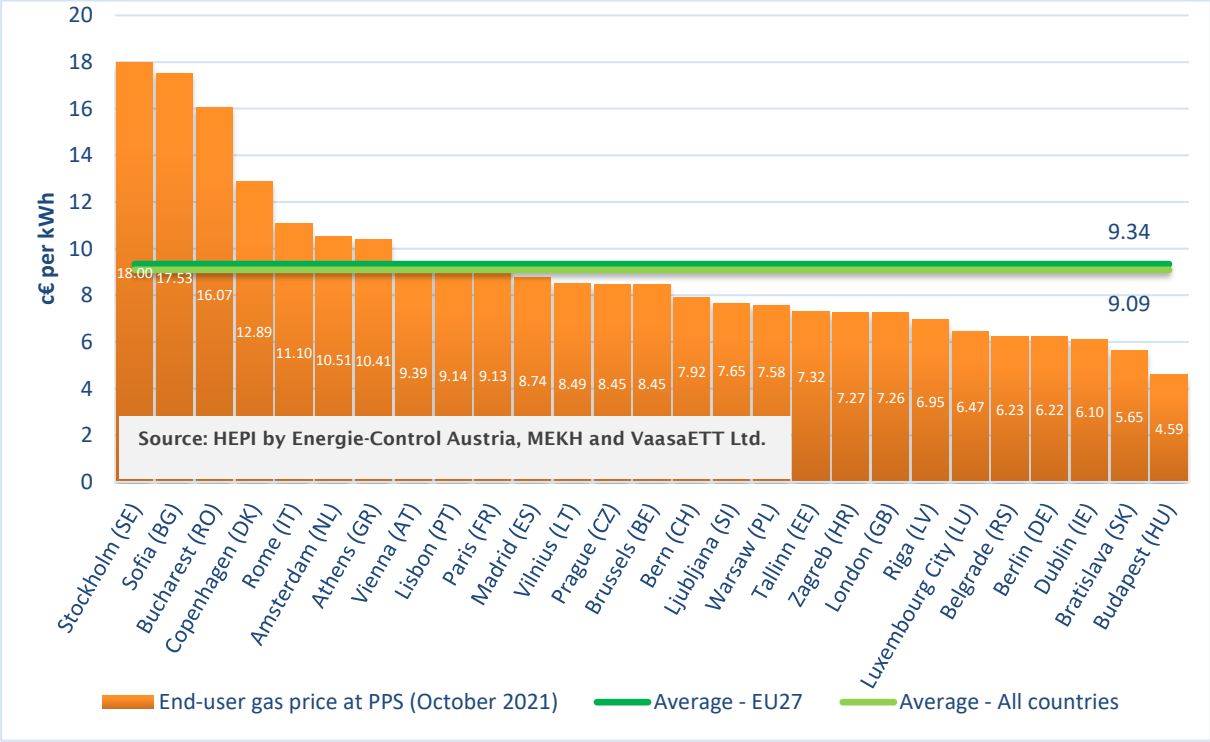
In Paris[11], the recent natural gas end-user price increase is expected to be the last one, at least until spring, after the government announced a price freeze to the current levels. Although wholesale prices are about to hike further up in the next months, the increase would not go through onto consumers, according to sources. This is one of the several measures taken by the French government to protect energy consumers. At the same time, it has been announced that electricity prices are also about to freeze and follow a limited increase of 4%, in 2022.

[9] SeeNews: "Bulgaria's energy regulator approves 36.2% rise in natgas price for Oct", 01.10.2021
[10] Anre: "ANRE a sanctionat furnizorii de gaze naturale cu amenzi in valoare de 2.690.000 lei", 14.10.2021
[11] Euronews: "Europe's energy crisis: France to freeze natural gas and electricity prices", 01.10.2021

Among several measures taken recently in Rome[12], the government decided on reducing energy taxes both in the electricity and natural gas market, in October, in the sight of increases up to 40% in the last quarter of 2021. Thus, the system charges, an additional cost to cover incentives for RES and decommissioning of nuclear power plants, have been eliminated for electricity, which resulted in the end-user price dropping by 1%. As for the natural gas market, the decrease on the system charges was not sufficient to have a significant impact on end-user price, resulting in a 13% increase.

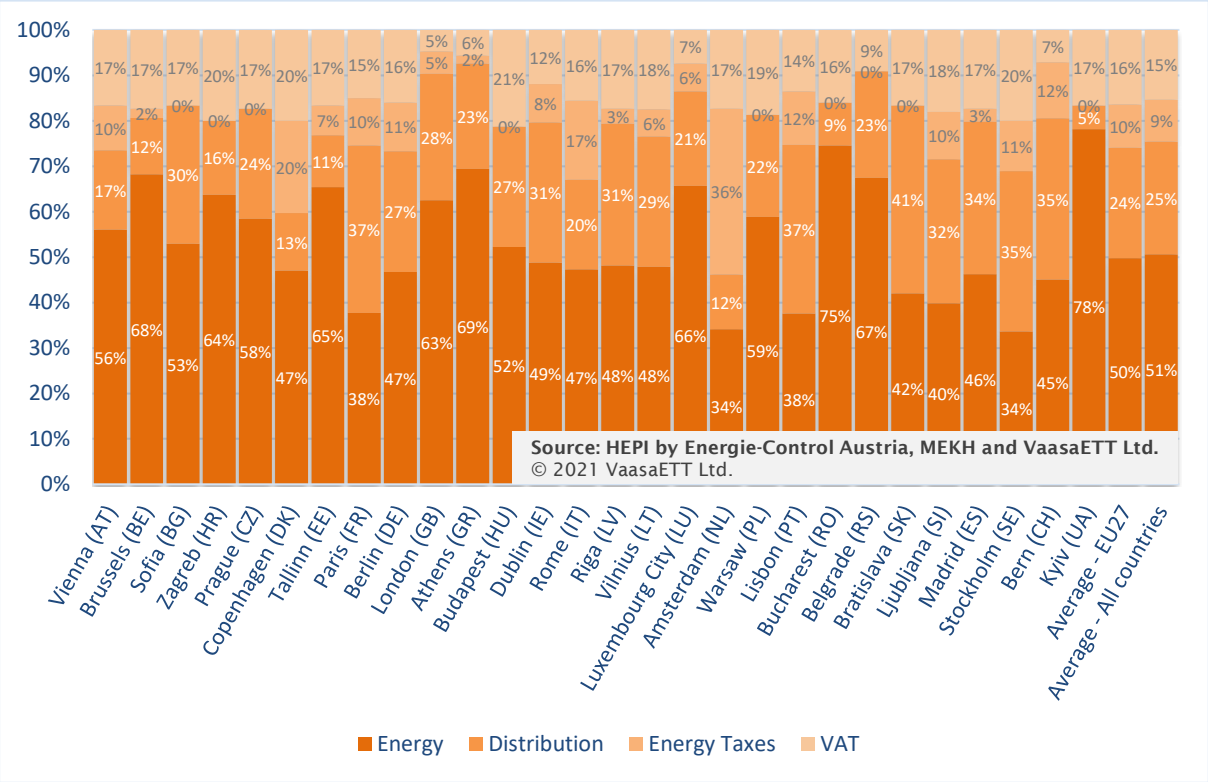
In the same vein as for electricity, gas prices at PPS offer a very different outcome from the actual prices. This month, Budapest, Bratislava and Dublin were the cheapest cities when adjusted to PPS (Figure 7).

Figure 7 Residential gas prices including taxes at PPS



[12] LuceGas: "Spesa Oneri di Sistema in bolletta luce: cosa sono?", 13.10.2021

Figure 8 Residential gas price breakdown[13]



Our survey shows that on average, energy (the contestable component of the price) represents 50% of the end-user price of natural gas, distribution 24%, energy taxes 10% 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 36%. 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 offers[14].

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

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

[14] 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 Eigenbaueras 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