

Explainer: Why are we in the midst of an energy crisis?

The current global energy crisis is caused by an ongoing shortage of energy generated by natural gas, which has resulted in prices soaring to record-breaking levels. This is due to several factors:

1 Security of supply: Uncertainty in sourcing of supplies from Russia causing wholesale energy prices to rise dramatically. Russia provides around 40% of Europe's gas, and around 4% of the UK's gas. High wholesale prices have pushed many energy suppliers out of the market in the UK as smaller suppliers haven't been able to afford the high wholesale prices.

2 Weather: Cold and prolonged winter conditions in Europe between 2020 and 2021 reduced supplies of natural gas. In the UK we've experienced low winds and therefore less wind energy generation, increasing reliance on natural gas.

3 Infrastructure failures: There have been outages in some nuclear power stations. A fire in Kent impacted a power cable used to import energy from the continent which isn't expected to be running again until 2023. There have also been complications to the Nord Stream 2 pipeline in the Baltic Sea, an \$11bn line which provides gas from Russia to Europe. The



project has been faced by multiple sanctions to stop its construction from the US and is contentious because it would increase European reliance on Russia for gas. It is unlikely now that the project will be finished at all due to the war.

4 Overall demand for energy: demand for gas has increased following recovery from the Covid19 pandemic. At the start of the pandemic prices hit historical lows but have been gradually bouncing back as business returns to normal.^{1/2/3}

¹ The Guardian, 2022, Gas Prices Hit Record High, online: <https://www.google.com/url?q=https://www.theguardian.com/business/2022/mar/04/gas-prices-hit-record-high-again-as-ukraine-invasion-disrupts-markets&sa=D&source=docs&ust=1662634062461887&usq=AOvVaw3oLynrLxZdqblgMjXWJkNA>, accessed 12/09/22

² Clean Energy Wire, Journalism for the Energy Transition, The energy crunch – What causes the rise in energy prices?, online: <https://www.cleanenergywire.org/factsheets/energy-crunch-what-causes-rise-energy-prices>, accessed 12/09/22

³ Good Energy, 2022, Why are energy prices so high? online: <https://www.goodenergy.co.uk/why-are-energy-prices-still-so-high-2/>, accessed 12/09/22

Explainer: What factors determine your energy bill?

The current way in which the British electricity market is designed means that electricity prices are mostly set by gas prices. This is because the short-term electricity market works on 'marginal pricing' – prices are set by the final source of energy used to meet demand. We use the renewable energy we generate first primarily because it's cheaper, and the last source of energy used is usually gas. For example, in 2019, electricity costs were set by fossil fuels 84% of the time. Today natural gas provides around 38% of our electricity generation, which has a relatively high running cost. We need to reduce and remove this reliance on gas or redesign the energy market to make prices more reflective of where our energy comes from.⁴

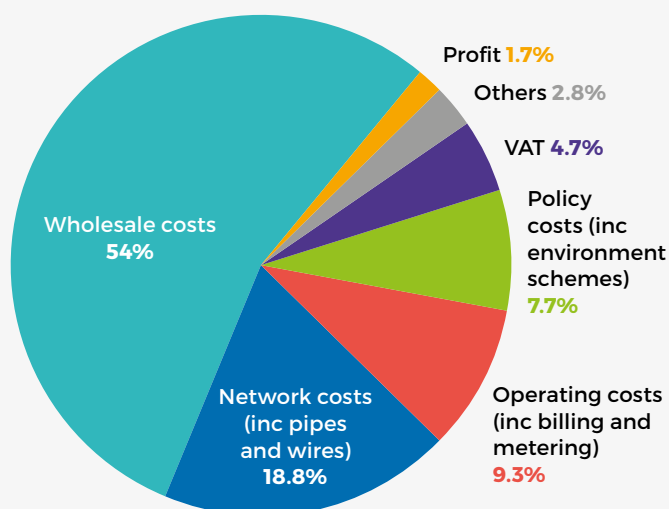
"Around the time that OPEC (Organisation of the Petroleum Exporting Countries) was quadrupling oil prices, the British rock band The Who released its totemic rant against corrupted governance, Won't Get Fooled Again. On oil and gas, though, we did get fooled again. Decisions made by successive governments perpetuated an industry that for 50 years has made a profit of \$3bn per day while taking the climate system perilously close to dangerous instability."

Richard Black, senior associate at the Energy and Climate Intelligence Unit and honorary research fellow at Imperial College London

Whilst retail energy bills include costs all energy suppliers have to pay towards environmental schemes, such as investment in renewable energies or energy efficiency schemes, the bulk of a consumer bill is made up of wholesale costs; which is how much the supplier has to pay to buy gas and electricity on the competitive market. It is worth emphasising, therefore, that the policy costs of environmental schemes, such as new renewable energy projects, have very little impact on a consumer's overall energy bill; this money is also allocated to schemes such as the Warm Homes Discount which help protect the most vulnerable consumers from fuel poverty.

How your fuel bill is broken down

Typical customer on a price capped dual fuel tariff paying by direct debit, summer 2022



Others includes costs of direct debit administration and allowances approved by the regulator

Source Ofgem

<https://www.bbc.com/news/business-58090533>

⁴ Good Energy 2022, Why does the price of gas drive electricity prices, online: <https://www.goodenergy.co.uk/why-does-the-price-of-gas-drive-electricity-prices-including-renewables/>, accessed 12/09/22

Explainer: If I buy energy from a renewable energy supplier, is my electricity consumption carbon neutral?

Unfortunately, procuring from a green supplier doesn't mean that your electricity consumption is Net Zero from an emissions perspective. If you consume energy from the grid, your electricity emissions will depend on the energy mix of the national grid at that point in time, and how much renewable energy capacity vs fossil fuel energy is being generated at a national level.

Green tariffs are not always as 'green' as they appear, so it is important to

find out which sources the energy is generated from (i.e. fossil fuels or renewables). If the provider holds direct power purchase agreements with renewable generators, then this can help to reduce demand for fossil fuels, and support the addition of new renewable energy capacity to the grid. To learn more about purchasing renewable energy, and how to choose a reputable supplier (including understanding the crucial difference between suppliers who use REGOs vs PPAs), [see our FAQ's on purchasing renewable energy for more information.](#)



Explainer: ‘Cutting the Green Crap’: What are the missed opportunities from an energy and housing policy perspective?

So why exactly is the UK so far behind many of its European neighbours when it comes to energy efficiency and sustainable energy⁵? Carbon Brief analysis has revealed that previous abandonment or poor design of energy policies in the UK over the last decade means that energy bills are now nearly £2.5bn higher than they would have been had the government taken action. So what were the points of failure?

David Cameron’s coalition government made some significant changes to levels of investment in energy efficiency policies. This included the ‘Green Deal’ energy efficiency scheme, which provided loans for householders to make energy efficiency improvements such as loft and cavity wall insulation to their homes. The scheme did little to benefit renters or social housing landlords, and the National Audit Office described the policy as a ‘failure’.

In 2015 subsidies for onshore wind were withdrawn, and new planning reforms made any new onshore wind development very challenging. New Onshore wind capacity per year dropped from 1.8GW in 2017 to 0.1 GW by 2020.⁶



The Zero Carbon Homes Standard (under the Code for Sustainable Homes 2016), which required that all new build homes needed to meet zero carbon building regulations standards, was also scrapped in 2015. As a result hundreds of thousands of homes have been built to lower energy efficiency standards. Heating and powering buildings currently accounts for 40% of UK emissions.⁷ To meet Net Zero goals, these newly built homes will now have to be retrofitted before 2050. There is currently a gap in energy efficiency policy for new buildings until the Future Homes Standard comes into place from 2025. This, along with Building Regulations, will aim to ensure that new homes built after 2025 will produce 70-80% less carbon emissions compared to homes developed under previous regulations.

⁵ Wunderflats, 2022, The Green Living Index Report 2022, available online: <https://wunderflats.com/page/reports/en-greenlivingindex2022>, accessed 12/09/22

⁶ Carbon Brief, 2022, Analysis, available online: <https://www.carbonbrief.org/analysis-cutting-the-green-crap-has-added-2-5bn-to-uk-energy-bills/>, accessed 12/09/22

⁷ Gov UK, 2021, Press Release: New homes to produce nearly a third less carbon, available online: <https://www.gov.uk/government/news/new-homes-to-produce-nearly-a-third-less-carbon>, accessed 12/09/22

Explainer: Is nuclear energy really low carbon?

Research has shown that the lifecycle emissions of a nuclear power plant can range from 8 to 64gCO₂e/kWh (depending on which life cycle assessment method is used) with averages well above the upper range of possibilities estimated by the Committee on Climate Change and significantly higher than the median value of 12gCO₂e/kWh used by the Intergovernmental Panel on Climate Change.⁸ This suggests that with this range of uncertainty in actual emissions, nuclear power may not be as 'low carbon' as is often believed by those who advocate for the technology, and more research is needed to fully understand the climate impacts of using nuclear power. Safe storage of waste, security risks and feasible exploitable abundance of uranium are all other issues that need to be considered.

Explainer: Is mining for renewable energy projects just as bad as mining for fossil fuels?

Responsible sourcing of the minerals needed for the low carbon transition is another issue that must be tackled, putting human rights and ethical production at the

centre of the transition. It is widely acknowledged that currently, mining for lithium, cobalt and other key minerals is an environmentally and socially unsustainable practice which is being scaled up for the roll out of electric vehicles and renewable energy technologies. Around 60% of global cobalt reserves are found in the Democratic Republic of the Congo, where human rights abuses and poor environmental conditions are rife. In Bolivia, around 17% of the world's lithium reserves can be found underneath the world's biggest salt flats, but historically mineral rights have been signed away to foreign companies, leaving the mineral rich country still very socially poor, with 40% of the population living in poverty.⁹

Despite the issues that need to be overcome to ensure ethical and sustainable supply chains for the minerals used in renewable energy solutions, the processes are significantly less intensive than the mining required for the fossil fuel based alternatives. Recycling to reduce demand for raw minerals and working to guarantee responsible resourcing are the most important solutions to focus on for ethically transitioning to electrification and a renewably powered future.¹⁰

⁸ Francesco Pomponi, Jim Hart, The greenhouse gas emissions of nuclear energy. Life cycle assessment of a European pressurised reactor, Applied Energy, Volume 290, 2021,116743,ISSN 0306-2619, <https://doi.org/10.1016/j.apenergy.2021.116743>. (<https://www.sciencedirect.com/science/article/pii/S0306261921002555>)

⁹ National Geographic, [This metal is powering today's technology—at what price?](#), accessed 12/09/22

¹⁰ Dominish, E., Florin, N. and Teske, S., 2019, Responsible Minerals Sourcing for Renewable Energy. Report prepared for Earthworks by the Institute for Sustainable Futures, University of Technology Sydney. https://earthworks.org/wp-content/uploads/2019/04/Responsible-minerals-sourcing-for-renewable-energy-MCEC_UTS_Earthworks-Report.pdf, accessed 12/09/22