Cooking on Gas

How green taxes are driving
up Britain's energy bills

ONWARD

Gavin Rice, Nicholas Stephenson
and Laurence Fredricks

About Onward

Onward's mission is to develop bold and practical ideas to boost economic opportunity, build national resilience, and strengthen communities across all parts of the United Kingdom. We are not affiliated to any party but believe in mainstream conservatism. Our vision is to address the needs of the whole country: young and old, urban and rural, for all communities across the UK – particularly places that have too often felt neglected or ignored by Westminster.

We believe in an optimistic conservatism that is truly national – one that recognises the value of markets, supported by a streamlined state that is active not absent. We are unapologetic about standing up to vested interests, putting power closer to people, and supporting the hardworking and aspirational.

Thanks

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Introduction to Onward's Energy Commission

Onward is developing an implementable energy strategy for a future incoming government with the goal of achieving UK energy abundance, prioritising affordability, security and a market-led approach towards energy supply.

The first report in this series examines the suite of policy costs imposed by the state at various stages of the supply chain. This includes taxes, levies and regulations applying to UK energy producers, which constrain overall supply. It also includes policy costs that apply at the supplier stage, including network costs, subsidy mechanisms for renewables investors and social schemes, which end up passed through to consumers through bills. Finally, it includes taxes and carbon pricing that increase the cost of energy for consumers, particularly industrial users of energy.

Britain has among the highest industrial energy costs in the world, and household bills are driving inflation, harming living standards and contributing to poverty. Meanwhile UK terrestrial decarbonisation has been extremely rapid and, on its own terms, successful, with emissions halving since 1990.[1] Unfortunately this has been achieved at least in part by industrial offshoring, and "austerity" - that is, households using less energy[2] and businesses engaging in less economic activity. This is not the right way to achieve net zero and, in the case of emissions that are simply moved offshore, does nothing to benefit the planet.

Energy consumption per capita is one of the strongest correlates of per capita growth and of living standards available in historic global data.[3] It is simply not possible for an economy to flourish without energy abundance, and demand from future technologies will only require more energy, not less. By pursuing unilateral energy disarmament, the UK risks consigning itself to falling behind for limited environmental gain.

This is a policy choice. But an alternative approach is possible - and necessary. This first report in Onward's series reveals where the state adds unnecessarily to energy costs for households and businesses, and identifies where policy-driven costs could be stripped back immediately.

Foreword

There is no such thing as a high-growth low-energy country. Cheap, reliable, abundant energy is why the United Kingdom has prospered for two centuries. The Industrial Revolution was fuelled by our plentiful supply of coal and Mrs Thatcher's boom years from our oil and gas resources in the North Sea.

We now stand a quarter through a new century, living with the consequences of a dangerous experiment. One which has waged a crusade against necessary parts of our energy system, which has chosen a system that needs to build ever more capacity for less productivity and which has distorted the market to benefit energy developers over consumers. As the energy-hungry growth opportunities of AI and an increasingly dangerous world zooms into closer focus, it is time for us to bring energy realism back to the debate.

This is seen most clearly in our electricity policy which has led to Britain having the most expensive industrial electricity in the developed world. Whilst this has been done in the name of climate change, it is in fact hindering not helping the situation. Moving people on to electricity to heat their homes or run their cars is one of the key planks of decarbonisation, and yet pursuing the cleanest electricity in the world no matter the cost is precisely what is driving up bills. There could be no better achievement for decarbonisation than to make electricity significantly cheaper, even if it wasn't 100% clean. This is a clear and indisputable truth but one which net zero ideologues refuse to engage with.

The Labour Government blames soaring energy costs on wholesale prices, but this is not borne out by the facts. This report from Onward makes clear that taxes, levies and renewables subsidies imposed by the state now make up a third of consumer bills. Stripping out carbon taxes on gas power alone - which have soared under Labour and are due to rise even further - would cut families' electricity bills by 10% tomorrow.

There is a wider question at hand. The UK is responsible for just 1% of global emissions. If a fanatical approach to net zero leaves us poorer, more reliant on imports, with higher energy costs and fewer jobs, which of the countries that make up the 99% of emissions – still rising around the world – will want to follow our lead? The UK has done more than any other major economy to cut emissions, but we have become a warning rather than an example to the rest of the world. For the UK to have any impact at all, ministers must prioritise the cheap electricity and energy resilience we need for industry to succeed and to improve living standards.

Axing the Carbon Tax, backing the North Sea, streamlining nuclear regulations that put the needs of newts over our need for reliable, land-dense energy, and being honest about the true cost of renewables would be a start.

I welcome Onward's work on this brand new energy commission to bring energy realism back into the debate. This first report illustrates where the state adds unnecessary costs onto bills. That is a welcome first step towards an energy system which puts cheap, reliable energy first.

~ Rt Hon Claire Coutinho MP
Shadow Secretary of State for Energy Security & Net Zero

Executive Summary

The cost of energy is one of the most important factors holding back the British economy. It has been the main driver of the rising cost of living, majorly accelerated UK deindustrialisation and is generating a major political backlash.[4] Attitudes towards net zero among voters are hardening, with a widening appreciation of how rapidly Britain has unilaterally decarbonised, in contrast with big polluters like China. Britain has been left with among the highest industrial electricity costs in the world.

While decarbonisation to tackle climate change may have had laudable intentions, it has been achieved in highly damaging ways. Britain has eradicated coal as a dispatchable source of energy, and reduced its domestic supply of gas by punishing North Sea production, before it has either the renewable energy infrastructure or the grid capacity to complete full energy transition. In fact, wind and solar generators are currently paid to take power off the grid in periods of excess capacity. Britain has failed to invest in adequate nuclear power, lagging far behind France, where nuclear energy provides for three-quarters of electricity demand. Britain's overall energy supply has been reduced without a plan to replace it.

Cutting domestic emissions has been achieved to a large degree by deindustrialisation, which has resulted in emissions-generating economic activity being moved offshore. Net zero has therefore been pursued on the basis of cutting energy use, rather than achieving an abundant renewable supply. The process of "carbon leakage", where emissions are simply moved overseas, damages Britain's economy while doing nothing to lower emissions globally. This not only gets the balance wrong between environmentalism and economic security; it is actively irrational.

Britain is highly gas dependent. Advocates of a full and swift transition are unrealistic: 85% of British households still rely on gas for home heating, it remains vital for industrial processes, and the grid relies on gas-generated electricity as a firm, dispatchable energy source 97% of the time. Failure to produce enough gas domestically has left Britain highly import-exposed, with half of demand met by expensive and carbon-intensive imports of liquid natural gas (LNG). North Sea Production has been penalised, even as the UK continues to import gas from the same sites from Norway.

As well as driving gas scarcity, UK policy choices actually make bills higher directly, too. Onward analysis shows that through taxes, levies and subsidy costs passed through to billpayers alone, the state adds 30% - or £285 - to a typical household.[5] And the state imposes costly carbon taxes and VAT on gas generators. These taxes add around 40% to the wholesale cost of gas, and 15% to the average family's bill.[6] These taxes on electricity generation could be cut almost immediately. This would make gas power cheaper - a vital first step in making electrification and decarbonisation of the wider economy affordable.

Finally, as well as taxing energy producers and imposing levies on suppliers, the state taxes the consumption of energy by businesses through carbon pricing and the Climate Change Levy. These policies are designed to incentivise industrial decarbonisation, but the reality is that they drive up electricity costs for businesses to unsustainable levels, leading to offshoring and industrial collapse.

The UK needs a radically different approach to energy policy, prioritising security of domestic supply and affordability for businesses and families. This will require more nuclear power, an economically sustainable and competitive renewables sector, and more abundant gas for the foreseeable future. It will also require reform of energy procurement, pricing and the auction system. Onward's energy commission will address all these problems in turn.

This first report focuses on fiscal policy choices that add to energy costs. None of the recommendations require new infrastructure, new investment by government or by the private sector, or any other physical change. Rather, they target additional, imposed costs in the energy system that a future government seeking to prioritise affordability and security could remove or radically reform.

1. How the state increases costs for energy producers

Energy affordability is a function of supply

In a well-functioning, abundant energy market, greater supply should enable lower energy prices. This is the basic logic of supply and demand, which underpins the efficient functioning of markets.

Some have suggested that the solution to energy scarcity and affordability is reducing demand. And demand has been falling: since 2020, the National Energy System Operator's (NESO) Future Energy Scenarios (FES) have constantly projected sharp and sustained rises in demand for energy, but in reality demand has continued to stagnate or fall in every year those projections were made.[7]

This should, however, be seen as a problem rather than something to be welcomed. Falling demand for energy is a sign of reduced economic dynamism, investment and output. It is also a sign of deindustrialisation. Falling demand is itself a function of the limits on supply, which is the primary cause of unaffordable energy.[8]

Britain is experiencing energy scarcity

The UK has reduced overall energy use per person and electricity production more than any other G20 country. UK electricity production per head is likely to fall below the world average.[9] This leaves the UK below Iran, Libya, Bulgaria and Belarus.[10]

Energy consumption per capita is affected by a range of factors, not only the cost and scarcity of energy. Overall economic performance also affects industrial activity and output levels, for example, and deindustrialisation due to factors other than energy prices will cause overall energy consumption to fall.

However, when compared to other members of the G20, including economies with a similar profile to the UK, it is clear that the UK has reduced its per capita energy consumption more than its peers, including France, Italy, Germany, Japan, Canada, and the United States.[11]

Figure 1: Change in per capita energy use (%) in G20 economies, 2003-2023

Source: Our World In Data[12]

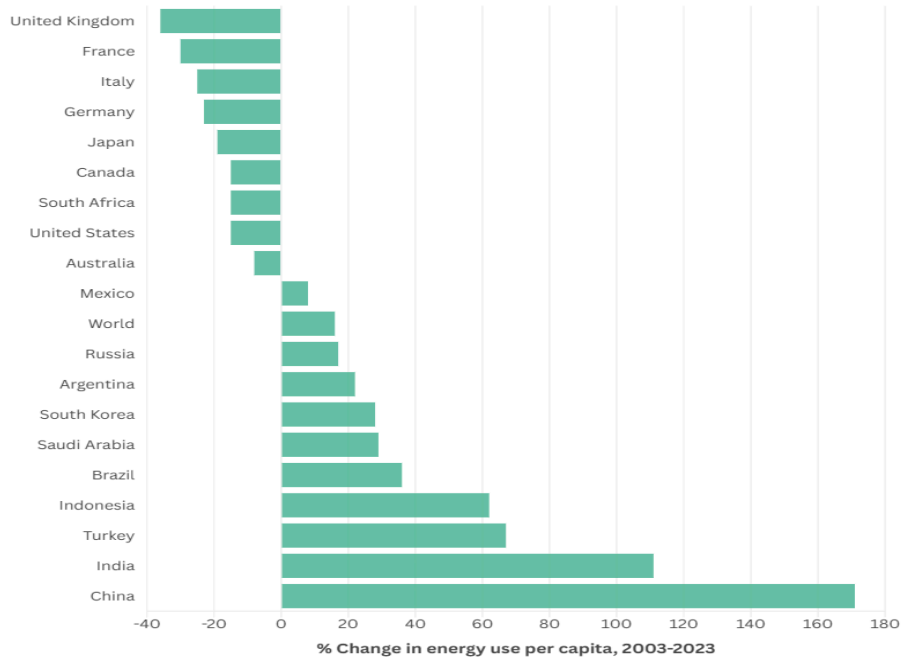
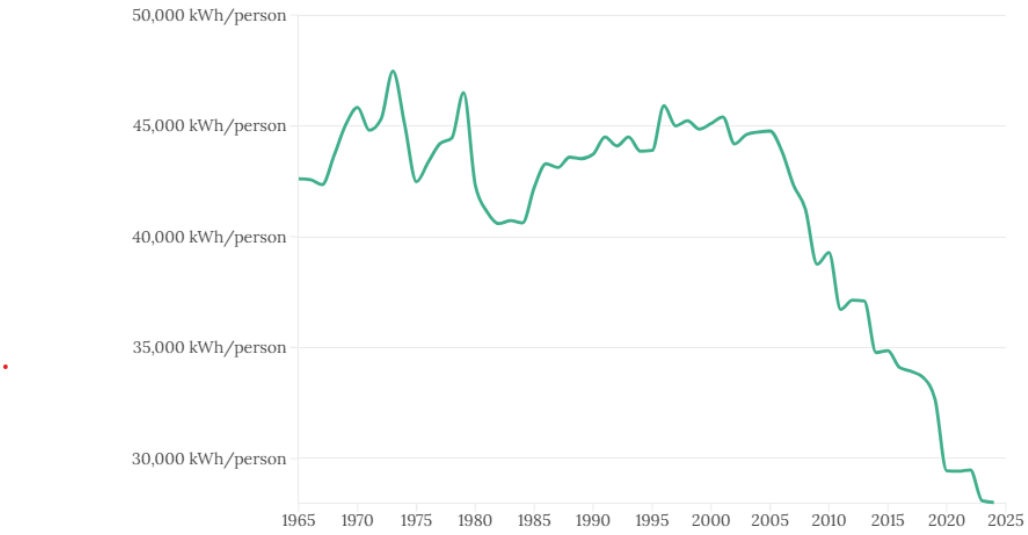


Figure 2: UK energy consumption per capita (kWh), 1965 - 2025

Source: World Bank[13]



Gas scarcity and grid limitations both drive lack of supply

Given the constraints on Britain's grid capacity, increasing overall supply is not completely straightforward. How energy supply feeds through into consumer and industrial prices is also determined in part by Britain's energy auction system.

In this system - the "merit order" - the most expensive energy source on a per unit basis (usually gas) sets the marginal price of electricity, after the less expensive forms (usually nuclear and renewables) have supplied what they can. If Britain had a much larger nuclear component in the energy mix, UK electricity prices would be much lower.[14] But due to the lack of sufficient nuclear, wind and solar power to meet demand, gas is still needed and sets the marginal wholesale electricity price 97% of the time.[15] Britain is therefore more beholden to gas prices than France, where nuclear generation sets relatively stable prices, or Germany, which historically has a mix of coal, gas, and hydro setting prices.

Worse still, the government makes wholesale gas more expensive by imposing taxes and carbon pricing on gas generators, even though gas remains an essential part of the electricity generation system.[16]

Limitations on grid capacity are another factor increasing the price of energy. Curtailment payments are currently made to renewable energy generators to reduce their output as the network cannot physically transmit the power they are producing.[17] This is a function of the inherent limitations on grid capacity and the fact that wind and solar power require significant additional transmission infrastructure. And policy costs such as renewables levies and Contracts for Difference add to bills on top of the wholesale price, supplier costs, the cost of grid upgrade and transmission and supplier margins.

Britain is highly dependent on imports

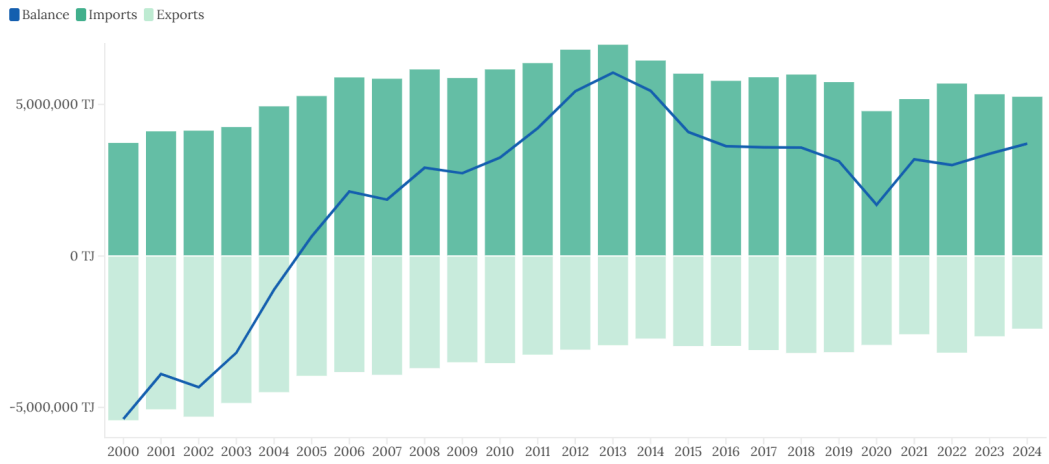
The UK spent the best part of 25 years as a net exporter of energy, from the 1980s through to 2004.[18] Throughout this period UK energy prices steadily declined in real terms.[19] This was due at least in part to policy-led optimisation of exploitation of the North Sea, and also to a greater supply of reliable, dispatchable power. The North Sea output supplied well over half of the UK fossil fuel demand for much of this period.[20] Production peaked in 1999 marking the high point of the basin's contribution to national energy supply.

However, the UK moved to being a net importer in 2004. Gas and oil comprise 90% of energy imports. This was due in large part to reductions in the output of the North Sea, and the switch from domestically mined coal to natural gas dominating within the UK energy system. The switch to gas meant the surge in consumption outpaced domestic production, and the phase out of old nuclear power stations and of all coal power reduced overall baseload capacity. Prices went on to double from the early to the late 2000s.[21] And separately from gas, the UK once again became a net importer of electricity in 2023, after a brief period as a net exporter.[22]

Extraction costs in the North Sea had risen due to natural geological depletion and it being a mature basin. However, the fiscal and policy environment also changed. The Supplementary Charge on North Sea profits was introduced by Labour in 2002 and increased to 20% in 2006, together with tighter environmental rules and mandatory public reviews of the impact of new site licensing.[23]

Figure 3: UK energy net exports, 2000-2024

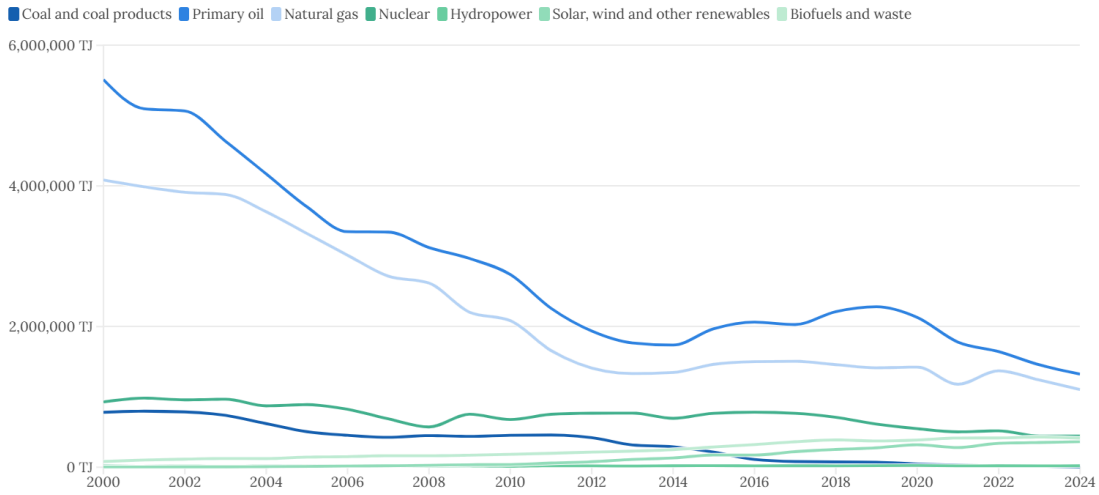
Source: International Energy Agency[24]



The UK once benefited from a plethora of energy sources. North Sea oil and gas, a robust fleet of nuclear power stations, and dispatchable power sources including coal all contributed to greater supply and competitive energy prices.[25] But today the UK is a net importer of energy and faces higher energy costs than our international comparators.[26]

Figure 4: UK generation capacity, 2000-2024

Source: International Energy Agency[27]



Climate policies have targeted producers as revenue sources

Climate objectives have now been enshrined into almost every component of energy policy. These measures were in part intended to internalise the externalities of carbon emissions. The UK has already made large reductions in onshore emissions, which are down 54% on 1990 levels.[28]

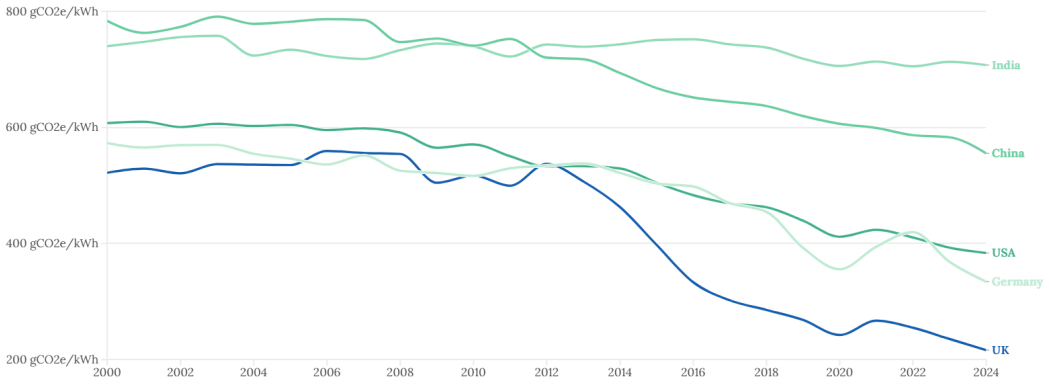
Britain has completely eliminated its coal production capacity, unlike Germany or China, but has not followed countries like France in developing a comprehensive nuclear or renewable replacement energy mix.[29] Nuclear power provides for more than 70% of France's energy needs.[30]

But the cumulative effect of these climate policies has been to disincentivise energy production and consumption by adding costs, reducing domestic supply, and increasing reliance on imported energy, while claiming tax revenues from domestic production. The fiscal targeting of North Sea oil and gas companies through windfall taxes like the Energy Profits Levy has been motivated partly by the drive towards decarbonisation and partly by a goal of raising additional revenue - a "cash cow" - for the state.[31]

Eliminating coal without a ready alternative has left the UK particularly reliant on gas, yet successive governments have consistently sought to disincentivise oil and gas production, consumption of gas and gas power generation through taxes and carbon pricing.[32]

Figure 5: Carbon emission intensity by country

Source: Ember, Electricity Data Explorer[33]



Britain was hit harder by the gas shock due to policy choices

The 2021-22 shock to gas prices arising from the Ukraine war hit the UK disproportionately because policy had removed alternative energy sources. The UK's last coal plant closed in September 2024, removing a flexible, dispatchable source of electricity.

In contrast, China's coal output reached record levels in 2025, hitting 4.83 billion tonnes, even as it has acted as a major renewables investor and manufacturer.[34] Coal accounts for 23% of German

electricity production.[35] Meanwhile the UK has eliminated coal without a secure, reliable and affordable alternative of baseload power. And this trend is not isolated, as the UK has also reduced its nuclear capacity.

Figure 6: Coal-based generation of electricity in the UK, 2000-2024

Source: DESNZ, 2025[36]

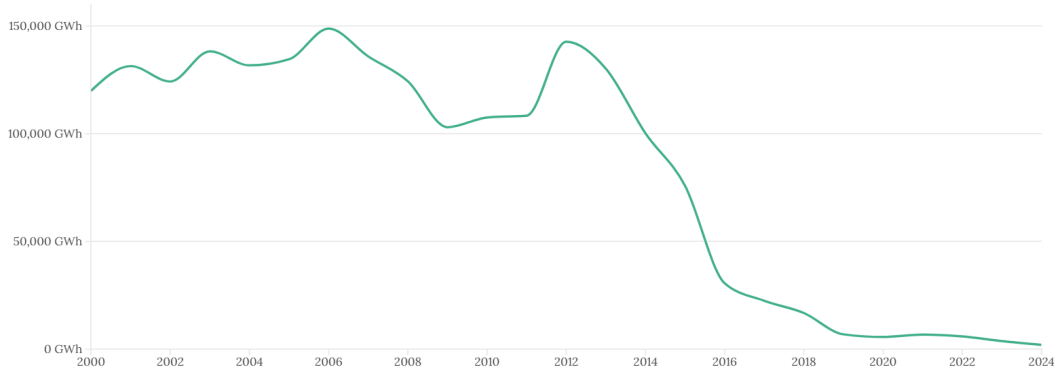


Figure 7: Coal production, 1990 - 2025

Source: DESNZ, 2025[37]

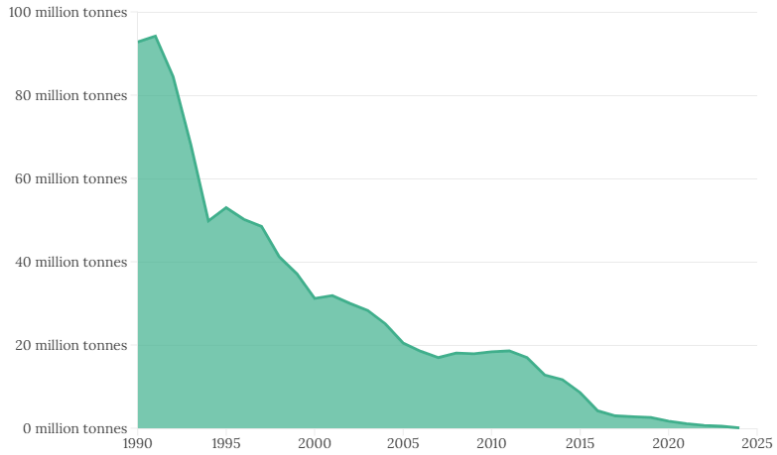
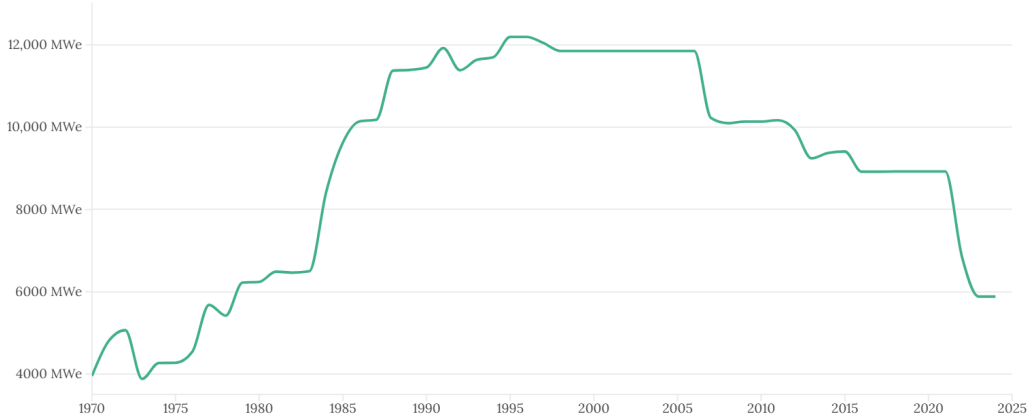


Figure 8: Total operable nuclear capacity, 1970-2025

Source: World Nuclear Association[38]



The UK's domestic capability to produce its own gas is rapidly diminishing; North Sea output is declining despite ongoing demand.[39]

As a result, the UK has become increasingly reliant on imported liquefied natural gas (LNG) rather than expanding domestic production. The North Sea Transition Authority anticipates that there will be an annual 11% decline in domestic production of offshore gas, despite natural gas still being used to 2050 for electricity and hydrogen production.[40]

This reliance on imports and exposure to international gas prices is the reason the UK was especially exposed to the gas price shocks resulting from Russia's invasion of Ukraine.

Figure 9: Pipeline imports, LNG imports and pipeline exports of natural gas, 2000-2024

Source: *DESNZ*[41]

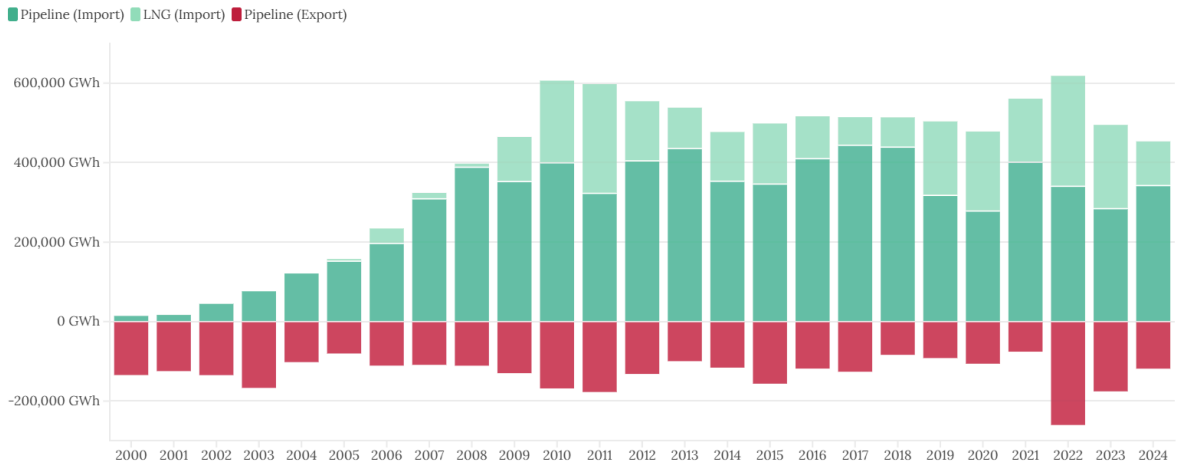


Figure 10: Natural gas exports to the UK by country, 2000-2022

Source: DESNZ[42]

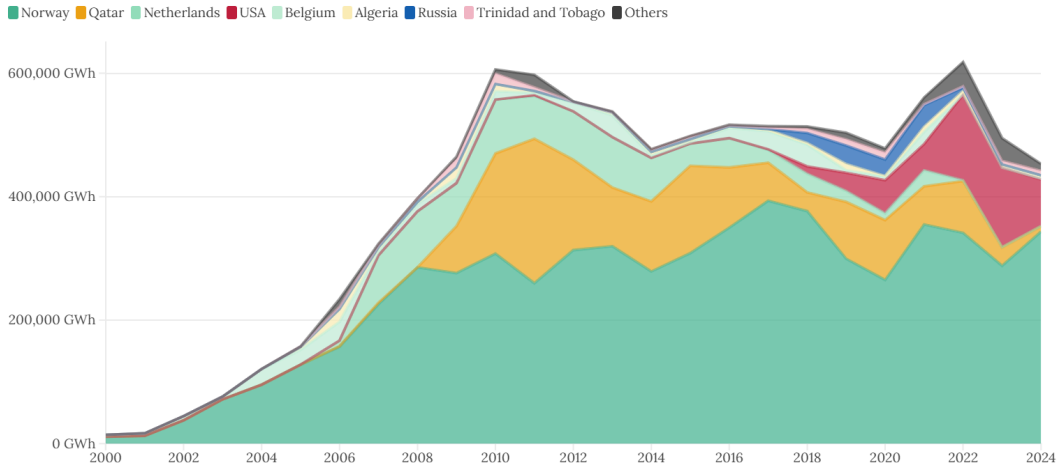
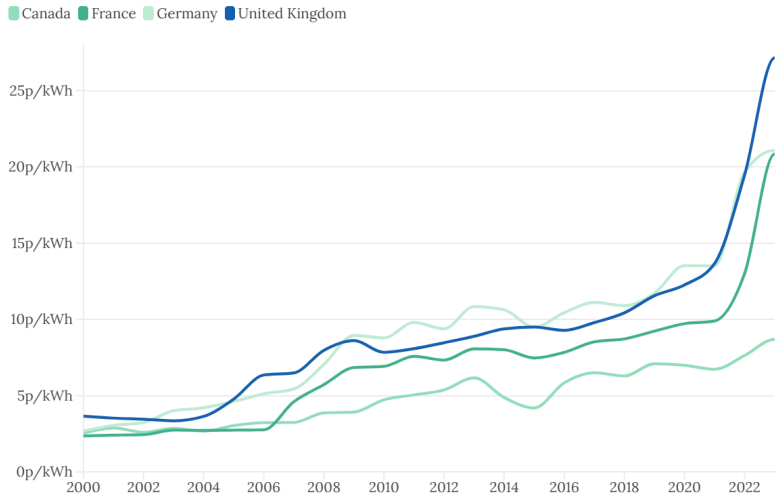


Figure 11: UK industrial electricity prices and comparator countries, 2021-2022

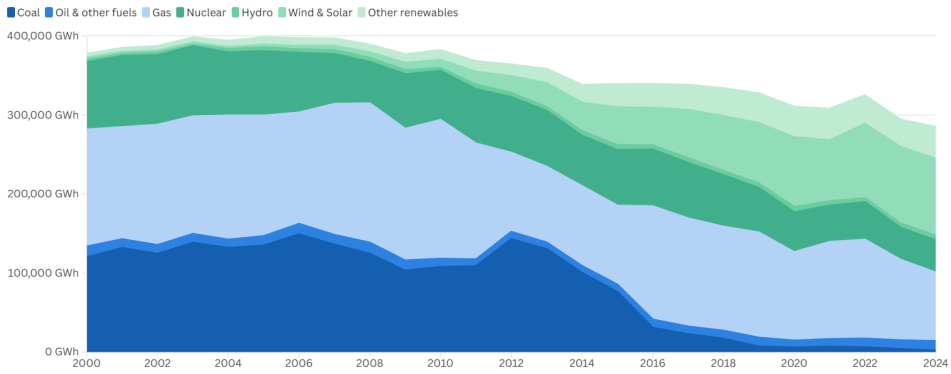
Source: DESNZ[43]



An overall reduction in energy supply has been exacerbated by the reduction in the share of dispatchable power within the overall energy mix.

Figure 12: Electricity generated by fuel type, 2000-2024

Source: DESNZ[44]



Government policies have penalised investment the North Sea

Historically the North Sea has produced volumes of oil and gas equivalent to well over half of UK fossil fuel demand, and this remained broadly true up until 2024.[45] But these reserves are rapidly depleting, alongside production, and as a consequence expenditure on decommissioning installations has hit a record high. In 2024 decommissioning expenditure reached £2.4 billion and £27 billion is estimated to be spent on decommissioning in the North Sea between 2023 and 2032.[46]

However, policy more than geology is reducing North Sea investment and exploitation. The North Sea is a mature basin, but the current rate of depletion is exacerbated by the UK's domestic net zero agenda. There are around 280 active oil and gas fields today, but 180 of these are expected to cease production by 2030.[47] This reflects regulated decline exceeding natural decline, as policy is determining output, rather than resources. A study by Offshore Energies UK estimated that 7.5 billion barrels of oil and gas could be extracted from the North Sea, 3.2 billion more than recent Government estimates, meeting half the UK's oil and gas needs.[48]

Fiscal disincentives to further North Sea production, together with refusal to grant licenses for new site exploration (discussed further below) have exacerbated extensive decommissioning. Decommissioning costs are subject to a tax rebate, which can make decommissioning more financially attractive than investing in more capacity.[49] However, as the process is still expensive enough, it tends to become irreversible.

Historically the North Sea fiscal regime in the form of Petroleum Revenue Tax (PRT) was designed to capture revenues rather than disincentivise exploitation, applying to fields approved before 16th March 1993 before being zero-rated in 2016.[50] Oil allowances and safeguard provisions would ensure less profitable sites would pay almost none of the tax, and capital allowances allowed companies to deduct more than 100% of their investment costs from taxable PRT profits.[51]

By contrast, the current North Sea fiscal regime, composed of Ring-Fenced Corporation Tax, the Supplementary Charge and the Energy Profits Levy, is designed around net zero objectives, with the exception of the latter originally being to capture windfall profits, and now taxes ordinary profits at headline rates of 78%.[52]

The two regimes differ not only in structure but in purpose: PRT aimed to collect revenue from production profits by capturing resource rents; the current regime is reducing the rents and profit incentives of production in the North Sea as a whole.

The fiscal impact to reduced domestic North Sea production then compounds: the decommissioning rebates themselves imply a fiscal cost to the Treasury, and once completed further tax revenues from profits then stop.

The North Sea still has significant potential

Under a more supportive framework the UK has the potential to produce 50% of its demand via North Sea extraction to 2050.[53] More pessimistic scenarios claim that only 15% would be supplied, owing to industry behaviour.[54] However, industry behaviour is shaped by high taxes, regulatory uncertainty, and higher imposed production costs. As a result, extraction is projected to decline faster than geology requires.

Case Study: North Sea Oil Scenarios

Analysis commissioned by Offshore Energies UK and conducted by Westwood Global Energy Group in 2025 examined the remaining productive potential of the North Sea to deliver the country's oil and gas needs. It found that the UK has the potential to produce greater resources than government estimates suggest by up to 3.2 billion more barrels, which will be crucial for domestic supply even if the UK were to hit its climate targets on time by 2050.[55]

Policy-constrained scenario (current trajectory)

Under current tax and regulatory conditions, only around 2.6 billion barrels of oil are expected to be produced by 2050.[56] In a scenario that continues the current trajectory, decommissioning expenditure is forecast to exceed capital investment by 2028.[57]

Supportive-policy scenario[58]

Under a more stable and investment-friendly policy environment, up to 7.5 billion barrels could be recoverable. This equates to around 3.2 billion barrels more than current estimates. This level of production could meet up to 50% of the UK's oil and gas demand through to 2050.

Lost economic potential:

The difference between these scenarios represents a substantial loss of national value, estimated at between £165 billion and £385 billion, depending on the policy path chosen.

North Sea output is in serious decline

Since 1999, output has fallen by more than 65%.[59] Some of this is an inevitability of a mature basin, but the pace of contraction reflects policy choices. Today, North Sea oil and gas accounts for less than 15% of UK electricity generation (once gas-fired generation is considered).[60]

While UK exploitation is in decline, Norwegian oil and gas companies such as Equinor actively exploit North Sea sites on the UK side of the border.[61] The UK also relies on importing gas from Norway that has been extracted from Norwegian territory sites. This compounds UK import dependency while actually increasing consumed emissions, since gas imports are more carbon intensive.

And this shrinkage will only continue; in 2024, for the first time since 1964, no new oil wells were drilled in the UK's North Sea territories.[62] This is a result of the regulatory and fiscal framework that has progressively undermined the commercial viability of domestic production. Meanwhile, the UK retains its gas intensive infrastructure despite declining supply. In direct contrast, Norway completed 49 exploration wells and made 21 discoveries on the Norwegian continental shelf in 2025 alone, up from 42 exploration wells in 2024.[63]

Punishing producers - the Energy Profits Levy (EPL)

Introduced in 2022 to capture genuine windfall profits arising from exceptional price spikes, the EPL now targets windfalls that no longer exist. The levy has instead become a standing penalty on production. From 1 November 2024, the EPL rate increased from 35% to 38%, alongside the removal of its principal investment allowance.[64] The abolition of the 29% investment allowance for qualifying expenditure has significantly weakened incentives to invest in new developments or life-extension projects.

The impact on investment of these policy decisions is material. Offshore Energies UK forecasts that the combined effect of a 78% headline tax rate and the removal of EPL investment allowances will reduce viable capital investment from £14.1 billion to just £2.3 billion between 2025 and 2029.[65]

By comparison, Norway's fiscal regime allows companies to recover up to £78 for every £100 of qualifying expenditure, delivering total relief of around £46.25 under comparable assumptions.[66] The contrast highlights the extent to which the UK regime has become internationally uncompetitive and has intentionally undermined production.

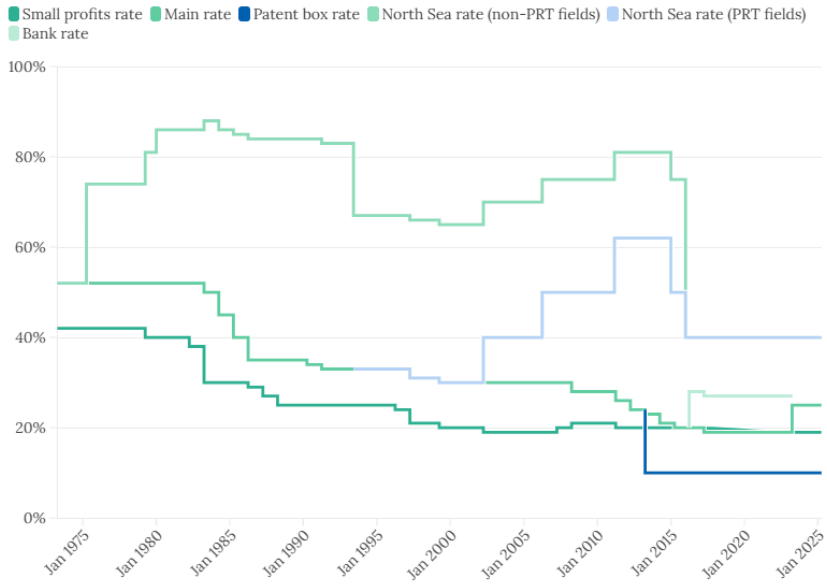
Ring-Fenced Corporation Tax and the Supplementary Charge

The structure of these two taxes further elevates the tax burden on North Sea operators. Ring-Fenced Corporation Tax applies a 30% rate to offshore profits and prevents companies from offsetting losses from other UK business activities. The Supplementary Charge adds a further 10% on adjusted profits while disallowing deductions for finance (borrowing) costs.

Together these measures operate as structurally higher and less flexible versions of standard corporation tax, ensuring that offshore extraction is consistently taxed more heavily than most other forms of economic activity, even after capital allowances are taken into account.

Figure 13: Tax rates on oil and gas producers, 1973-2025

Source: Institute for Fiscal Studies[67]



The cumulative effect of this regime means that investment is discouraged, production declines faster than geology requires, and domestic energy supply is progressively replaced with imports.

Bans on new North Sea exploration

The current government's licensing regime is fundamentally misaligned with its tax and regulatory framework. The government has introduced Transitional Energy Certificates (TECs) to facilitate the continuity of the UK's existing offshore oil and gas sector. Under this framework, TECs are effectively a licensing regime that will enable limited production on or near existing fields, provided activity does not involve new exploration, is part of or links back to existing fields and infrastructure, and is necessary to sustain production through the natural decline of the basin.[68]

Although this approach aligns with the government's commitment not to award new exploration licences, reflecting climate goals, it perpetuates reliance on more polluting gas imports. The result is a contradictory policy environment: companies are encouraged to maintain output in theory, but face tax rates and general bans on new exploration that make doing so increasingly uneconomical in practice. This inconsistency further suppresses investment and accelerates decline beyond what geology alone would dictate.

An even more extreme approach has been taken towards onshore fracking, which has been completely banned in the UK since 2019. This has for the foreseeable future cut off any possibility of expanding land-based domestic shale gas supply, regardless of technological developments or potential investment appetite.[69] This will be explored further in a later report.

North Sea viability is now in question

Oil and gas revenues fell from £6.1 billion to £4.5 billion in 2024–25, despite the continuity of the Energy Profits Levy (EPL); evidence that the Levy is accelerating decline in the sector and costing the Treasury billions rather than raising additional revenue.[70]

Projections indicate that decommissioning spending will exceed commercial capital investment by North Sea oil and gas companies by 2028. The EPL has been responsible in part for the cessation of production decisions being brought forward, resulting in higher decommissioning expenditure in the short term.[71]

Carbon taxes and pricing add to the cost of gas

In addition to the taxes and regulatory restrictions on new oil and gas supply, the UK also imposes additional carbon taxes which add to the wholesale cost of gas, including gas generation of electricity.

These additional taxes are Carbon Price Support (CPS) and the UK Emissions Trading System (ETS). Originally intended to disincentivise the use of coal to cut domestic carbon emissions, these taxes now remain an additional burden on gas supply - despite the UK's high degree of exposure to gas.

Gas-fired generation remains essential for system balancing, meeting peak demand, compensating for renewables intermittency and ensuring resilience, but it is simultaneously penalised through additional taxes and carbon pricing.

Carbon Price Support (CPS) - an obsolete tax

The objective of CPS has largely been achieved: coal has been eliminated from the grid. Ratcliffe on Soar, the UK's last coal fired power station, closed in September 2024.[72] But CPS remains in place and now functions primarily as a tax on gas-fired generation. Because gas is the UK's marginal generator, CPS feeds directly into the wholesale marginal price in the day-ahead market.

This means the tax now raises the cost of every unit of electricity produced, including electricity from sources that pay no CPS at all, namely the renewables intending to lower energy costs, by increasing the price set by gas.

The Centre for British Progress estimates that CPS adds approximately £6.60 per MWh to the cost of gas-fired electricity.[73] This raises costs for industry, households and the public sector indirectly through the wholesale market. As coal no longer burns in the UK, CPS no longer drives fuel-switching; instead, it increases the cost of dispatchable generation, making the UK more exposed to volatility in global gas markets and raising the overall price floor of the system.

The UK Emissions Trading System (ETS) - a high and rising burden

This system was designed to use market forces to incentivise lower-carbon technologies for energy production by gradually limiting permitted emissions and subsequently increasing costs. In theory, the ETS should reward efficient producers and discourage high-carbon alternatives.

In practice, it interacts with CPS to create a double carbon-pricing burden on gas producers. The scheme now plays a more explicit role in delivering the Government's net zero trajectory than in ensuring energy security or maintaining adequate domestic supply.[74]

The Government has announced its intention to align the UK ETS more closely with the EU scheme, a move that is expected to push carbon prices higher.[75] The EU emissions trading scheme has been trading approximately 50% higher than the UK's comparative scheme for the last two fiscal years.[76]

Equalisation with the EU scheme may achieve marginal emissions reductions on paper, but it risks higher costs for British industry; increased dependency on imported energy; carbon leakage as domestic production falls; and ultimately higher global emissions as the UK displaces relatively efficient domestic gas with higher-carbon LNG imports. EU ETS linkage would also make scrapping UK ETS "difficult if not impossible," according to the Centre for Policy Studies, as both sides must maintain emissions trading systems.[77]

Data from 2022 shows imported emissions were at their highest level since 2007.[78] Given that the UK will rely on gas for decades even as the grid decarbonises, an ETS that suppresses domestic production without credible substitutes may simply raise costs and undermine energy security without delivering meaningful global emissions reductions.

The cost of carbon taxes on household bills

CPS and UK ETS cost the average UK household, assuming that that household consumes 3,100 kWh of electricity annually, around £94 per year comprising 10% of its annual energy bill.[79] Carbon taxes therefore increase wholesale prices by around 40% relative to the underlying pre-carbon fuel cost.[80] Of this £96 uplift, around a fifth of the cost is due to CPS with the rest a result of UK ETS, meaning that the cost of each is approximately £22 and £72 per household respectively.[81]

Figure 14: Average Annual 3,100 kWh Household Electricity Bill by Component (£), 2025 Financial Year

Source: Onward analysis, Electricity Bills UK[82] *& Scrap Carbon Taxes*[83]

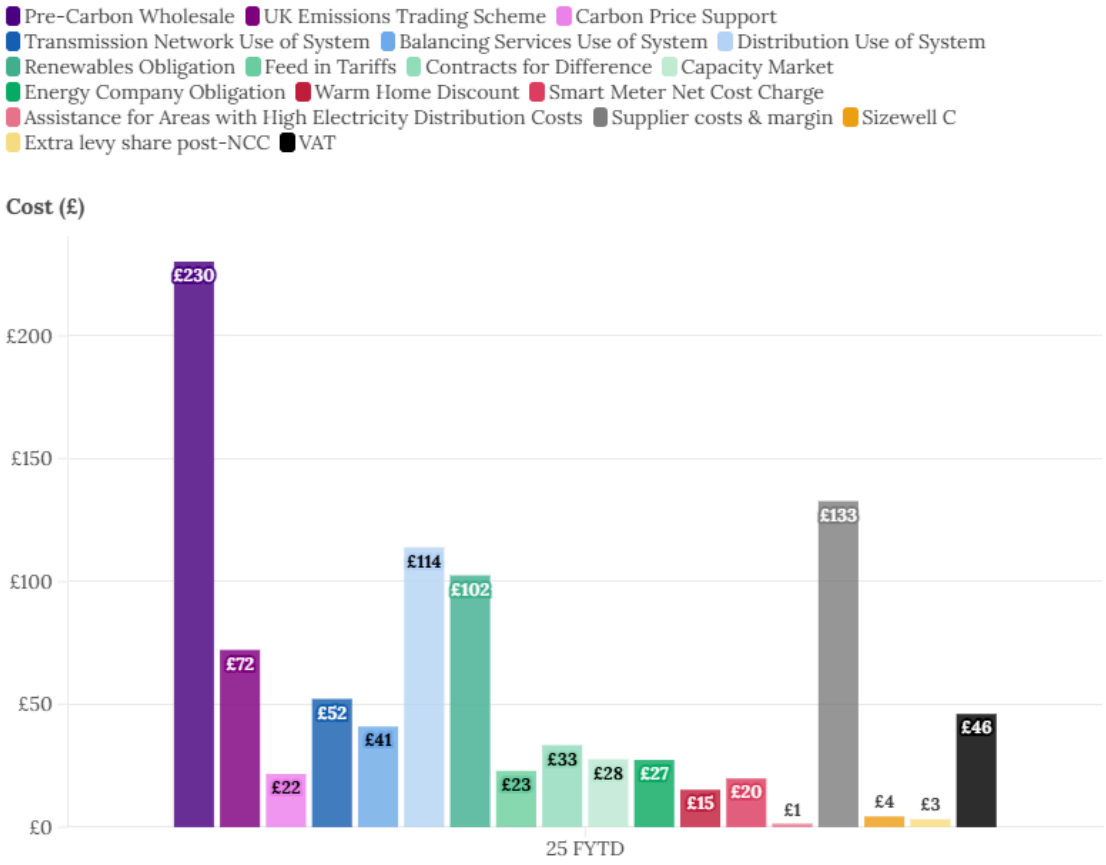
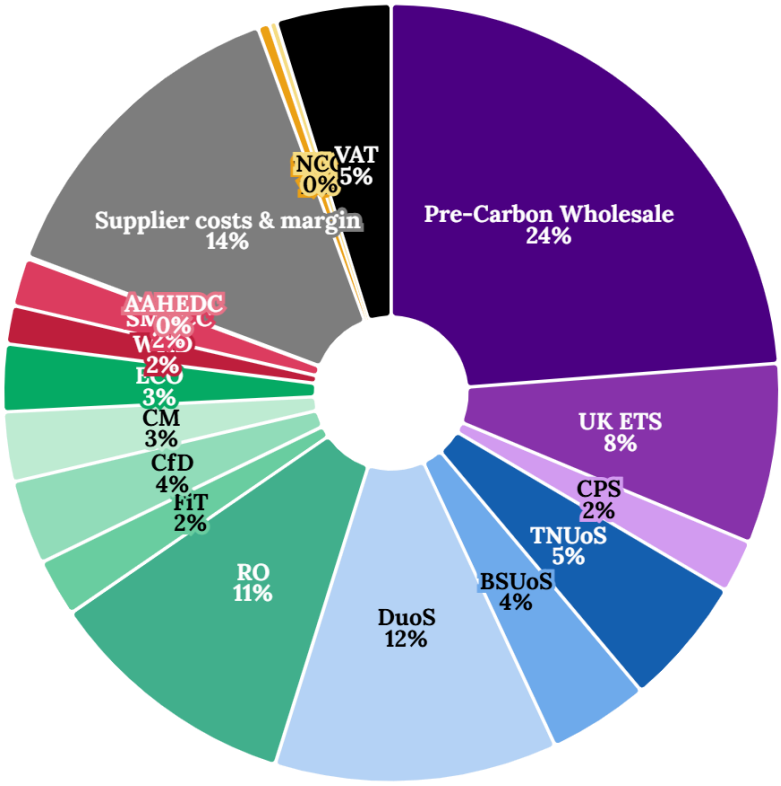


Figure 15: Average Annual 3,100 kWh Household Electricity Bill by Component (%), 2025 Financial Year

Source: Onward analysis, Electricity Bills UK,[84] Scrap Carbon Taxes[85]



Impact of the Carbon Border Adjustment Mechanism (CBAM) on refineries

The UK's downstream energy infrastructure is also under strain. Since 2024, the number of operational refineries has fallen from six to four, following the closure of Grangemouth in Scotland and the Prax refinery at Lindsey. These refineries are critical national assets, producing most of the fuels required for transport and heating, including petrol, diesel, jet fuel, fuel oil, and heating oil. The remaining facilities have over one million barrels per day of refining capacity.[86]

The exclusion of refining from the UK's Carbon Border Adjustment Mechanism (CBAM) compounds this problem. CBAM is intended to prevent carbon leakage by imposing charges on imports produced under weaker environmental standards.[87] The most important input for refineries is gas, which emits carbon and is therefore subject to the UK ETS. Not only must refineries pay for energy, but also their carbon costs. Without the protection against carbon leakage through offshoring provided by CBAM, UK refineries face structurally higher costs than international competitors, increasing the risk of further closures and deeper import dependence for refined fuels.

Pursuing energy diversification by punishing domestic producers

The UK's strategy to diversify its energy mix is grounded in legitimate objectives: reducing carbon emissions, hedging against fossil fuel price volatility, improving energy security, and transitioning away from finite resources. These goals are not inherently in conflict with maintaining domestic energy production.

But a successful transition does not require the accelerated decline of domestic supply. On the contrary, domestic production can reduce global emissions by displacing imported LNG, which typically has higher lifecycle emissions. A balanced energy system, combining gas, nuclear, renewables, storage, and dispatchable capacity, depends on domestic producers remaining commercially viable throughout the transition.

Instead the UK has constructed an energy policy framework centred on reducing domestic emissions, suppressing energy use, and increasing prices to change behaviour, while assuming other countries will follow a similar path. The outcome has been a system in which abundance has been replaced by scarcity, firm capacity by intermittency, and stable investment by accelerating decline.

Prices have risen while capital investment has collapsed. Consumers bear higher costs, energy security has weakened, and domestic producers face growing disincentives to invest or remain in the UK market. The result is not a smooth transition, but a more fragile, more expensive, and more import-dependent energy system.

Recommendations

Abolish the Energy Profits Levy (EPL). Fiscal policy for oil and gas producers should be a single, stable regime. Windfall taxes reduce domestic supply and increase import dependence while generating uncertainty for investors.

Normalise corporate tax for energy producers. Align the corporation tax regime for oil and gas producers with that for the rest of the UK by abolishing Ring-Fenced Corporation Tax.

Abolish the Supplementary Charge. Overlapping taxes create complexity and perverse incentives. Corporation Tax is already charged on profits not revenues.

Commit to a minimum fiscal stability period. Arbitrariness and uncertainty are ruinous for investment decisions that are by definition multi-year and involve commercial risk. While no parliament can bind its successors, a stable fiscal framework should be enshrined in current law, ruling out retrospective tax changes and one-off windfall levies.

Resume regular, predictable licensing rounds. End the ban on further oil and gas exploration and remove approvals from short-term political decision-making, treating licensing as an administrative decision based on safety and mainstream compliance requirements, not climate targets.

Remove climate targets from decisions over domestic supply. Targets currently written into law should not affect domestic producers. Restricting production does not reduce UK demand or UK carbon consumption, but it does constrict supply and increase costs.

Abolish Carbon Price Support tax on gas generators. This tax was designed to disincentivise coal and has performed its role. An additional carbon tax on the power source that sets the marginal wholesale rate more than 90% is irrational and should be ended.

Abolish carbon pricing via the Emissions Trading System (ETS) entirely for gas generators. This represents a form of double taxation on gas, and feeds directly through into wholesale electricity prices. Gas-based electricity generation is a small percentage of UK overall emissions.

Apply equal regulatory and compliance costs to imports. Where domestic oil and gas producers face environmental or adjustment mechanisms such as environmental offset obligations, these should apply equally to those exporting carbon-emitting energy to the UK so there is a level playing field. UK refineries should be protected by CBAM.

Designate North Sea oil and gas as Critical National Infrastructure within the National Security and Investment Act 2021. Energy producers provide a vital role in the UK energy supply chain and in UK energy security. They should be designated as security assets within the Government's national Industrial Strategy and feature in overall supply chain resilience planning.

Remaining sector-specific taxes should have fixed sunset clauses. All taxes and regulations that specifically target oil and gas producers should be sunsetted so they expire unless Parliament explicitly renews them.

"Full expensing" should apply for oil and gas producers, replacing more limited sector-specific allowances. The commercial risks associated with capital investment are considerable for investors and oil and gas producers should benefit from being able to deduct 100% of qualifying capital expenditure against corporation tax in year 1.

2. How state-imposed costs on energy suppliers affect bills

In addition to taxing production the state imposes various taxes and levies on energy suppliers, which are the companies that buy energy and then sell to consumers through household and commercial bills.

These levies are passed on to households. Wholesale costs only represent 34% of a typical bill. Businesses are largely protected from levies, but their energy consumption is taxed in other ways, through carbon pricing and the Climate Change Levy, explained in Chapter 3. Carbon pricing and taxes are also levied on gas generators, which is reflected in the wholesale price of gas generated electricity when sold to energy suppliers.

Onward analysis shows that the combined effect of taxes on generators, policy levies and renewable subsidy mechanisms like Contracts for Difference (CfDs) is to add 30% - or £285 - to the average household's energy bill.[88] Some of these charges, including for the Capacity Market, network charges and balancing costs, cover the cost of transmission, grid upgrade and maintenance and balancing capacity on the grid to ensure a continuous energy supply. Some of these - such as curtailment payments, when renewable generators are paid to switch off - are the result of long-term policy failure but are not a direct levy. Some are system requirements. Others are levies passed directly onto billpayers.

How policy costs affect the supplier stage

Supplier-side costs are additional energy costs administered by suppliers such as British Gas, Octopus Energy, and OVO Energy. While these are charged to and administered by energy suppliers, they are almost entirely paid for by consumers, as suppliers recover nearly all policy-related obligations from billpayers.

These costs therefore comprise a major component of household energy bills. These layers of levies and charges include network costs, subsidies for renewable technologies, charges for smart meters, home-efficiency schemes, and levies to fund major infrastructure projects such as the Sizewell C and Hinckley nuclear power stations.

Households are exposed to these costs but industries are better insulated. Energy-intensive industries (EIIs) are almost completely exempt in order to maintain global competitiveness and prevent carbon leakage, And from 2027 many small and medium manufacturers will also receive relief as part of the British Industrial Competitiveness Scheme (BICS). Small businesses are however often liable to pay these levies.[89]

The exemptions will ensure that around 7,000 electricity-intensive businesses in manufacturing sectors like automotive, aerospace and chemicals will be exempt from levies such as the Renewables Obligation, Feed-in Tariffs, and Capacity Market charges (explained below), reducing their costs by

up to £40 per MWh.[90]

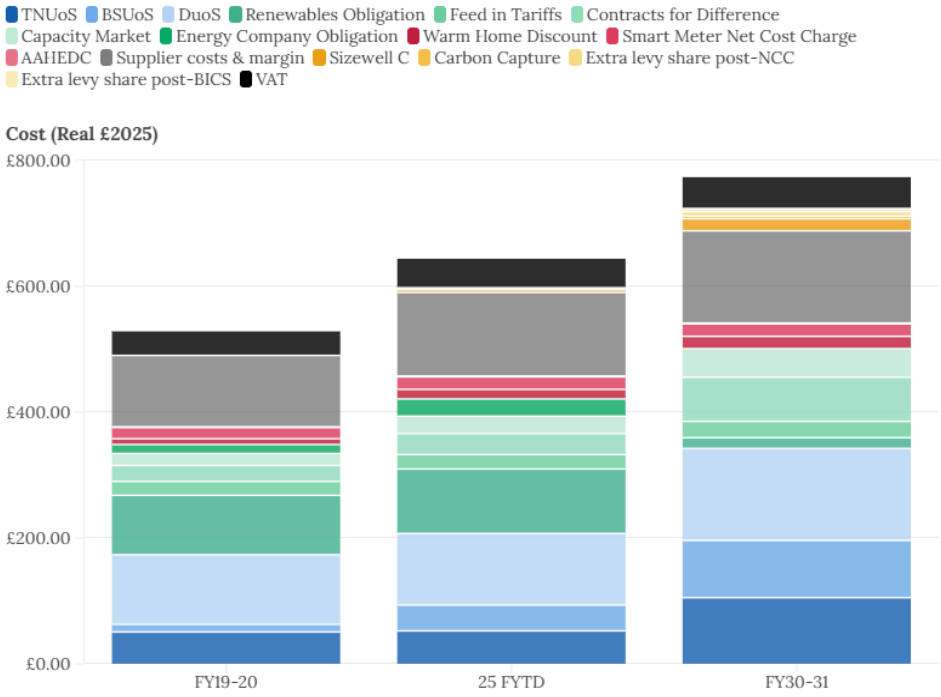
Additional costs have risen even as wholesale prices fall

While wholesale costs have been falling over the past few years, with the exception of 2022 and 2023 when they rose significantly as a result of the war in Ukraine and consequent gas crisis, supplier-side costs have risen significantly. This has led to household bills increasing rather than benefiting from falling wholesale costs. It is projected that generation subsidies, carbon taxes, and levies will cost the average household £285 in 2026-27, comprising nearly a third of the average household bill.[91]

Of these, three components, VAT, UK ETS, and Carbon Pricing Support — which together cost the average household £140, or about 15% of an average household bill - could be removed quickly from gas generators without significant domestic legal complications, though carbon pricing is linked to international climate agreements.[92]

In spite of the Chancellor, Rachel Reeves, scrapping the Energy Company Obligation (ECO) from the end of this year and slashing the cost of the Renewables Obligation (RO), which is passed on to households, the non-wholesale, supplier-side costs are still projected to rise from £644 to £776 by 2030 for the average UK household.[93] Scrapping the Renewables Obligation completely along with Contracts for Difference and Feed- in-Tariffs would save the average household in 2030-31 £113 a year.[94]

Figure 16: Non-wholesale costs and projections for the average 3.1 MWh UK household
Source: *Electricity Bills UK*[95]



This is partially because of a projected increase in other renewables subsidies, including Contracts for Difference (CfDs). But it is also due to the introduction of new levies such as the Regulated Asset Base (RAB) model, which is used to fund the construction of Sizewell C, Carbon Capture Storage projects such as net zero Teesside, and new costs related to the British Industrial Competitiveness Scheme (BICS).

Full breakdown of costs passed on to consumers

The Renewables Obligation (RO)

The Renewables Obligation is the UK's older subsidy for large-scale renewable energy projects, which the Chancellor announced in the November 2025 Budget would be re-indexed from the Retail Price Index (RPI) to the Consumer Price Index (CPI) and have around 75% of its cost moved into general taxation.[96] Although no new projects have been accredited since 2017, when the scheme began to be phased out, RO accreditations are valid for 20 years and so the levy continues to have an effect on consumer bills.

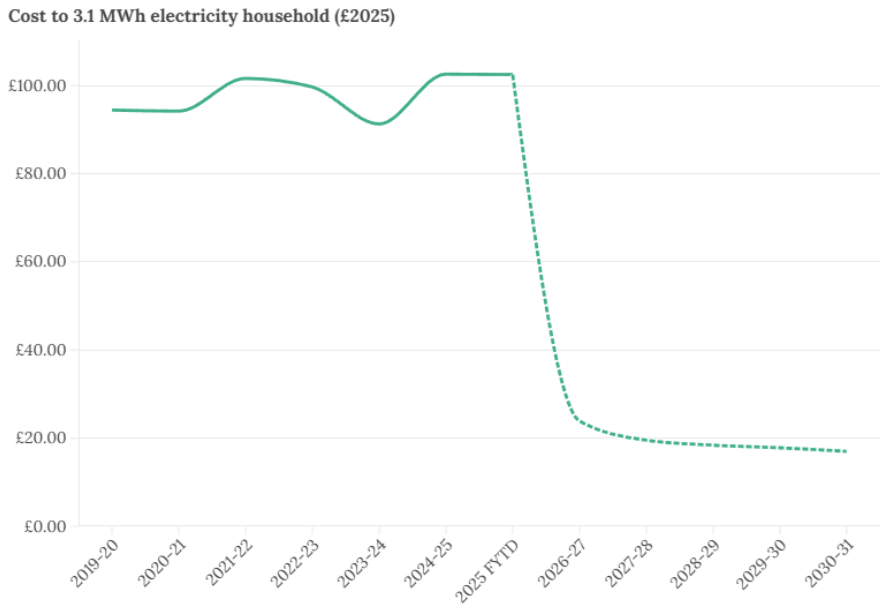
The RO requires electricity suppliers to purchase a certain share of supply from renewable technologies. To do this, renewable obligation certificates (ROCs) are issued to renewable energy producers, and suppliers must purchase these from the renewable generators in order to prove that a certain amount of electricity has been generated from a renewable source. If a supplier cannot provide enough ROCs, it must pay a "buyout" price for each ROC it is short.

As RO support arrangements expire, their impact on consumer bills will steadily decline. By 2037, all RO support will have ended, removing their effect on bills entirely. For the average 2025 household, ROs cost £102 and comprise 11% of the average household bill.[97] In 5 years, the cost was projected to fall to £68 and will comprise 6% of the average household bill. However, between 2026 and 2029 the Chancellor has said that the Exchequer will refund 75% of domestic RO costs. Therefore the cost will instead fall to £17 and 2% of the average household bill.[98]

- **Cost to Average 2025 Household**: £102 (11% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £17 (2% of household energy bill)

Figure 17: Impact of Renewables Obligation on electricity bills for an average 3.1 MWh domestic household, 2019–2031.

Source: Electricity Bills UK[99]



Feed-in-Tariffs (FiTs)

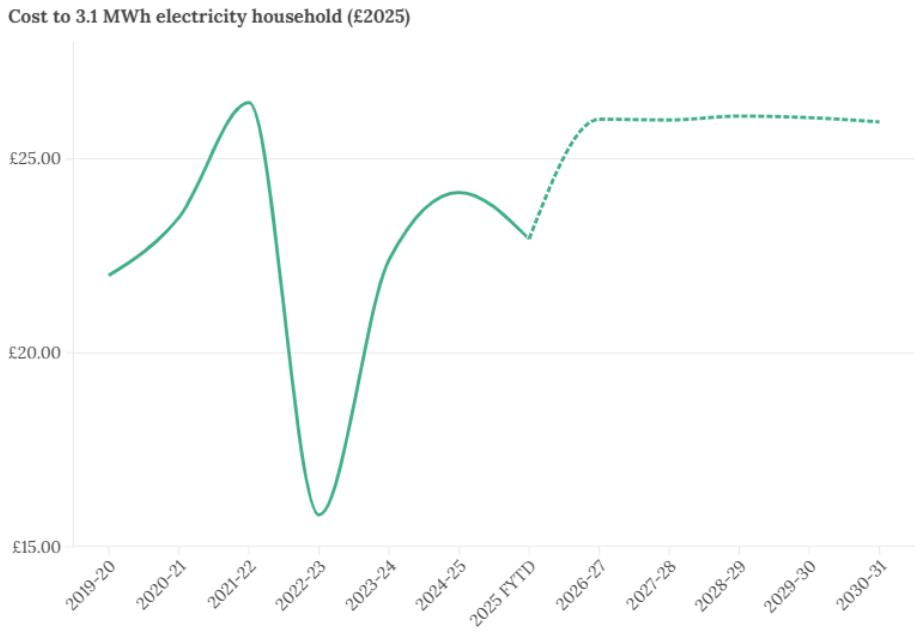
Feed-in-Tariffs (FiTs) are a legacy subsidy for small-scale renewables which pay people for generating their own renewable electricity through solar panels, wind turbines, and other small-scale renewable technologies. The FiT gives two payments: one for each unit of electricity generated, and another for any surplus exported to the grid. Energy suppliers make these payments and the cost is recovered through consumer bills.

The scheme has been closed to new installations since 2019, but as FiT contracts typically run for 20-25 years, existing participants will continue to receive payments until their contract expires. For the average 2025 household, FiTs cost £23 and comprise 2% of the average household bill. In 5 years, the cost is projected to rise to £26 and will comprise 2% of the average household bill.[100]

- **Cost to Average 2025 Household**: £23 (2% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £26 (2% of household energy bill)

Figure 18: Impact of Feed in Tariffs on electricity bills for an average 3.1 MWh domestic household, 2019–2031.

Source: *Electricity Bills UK*[101]



The Supplier Obligation and Contracts for Difference (CfDs)

CfDs are the current subsidy mechanisms for large-scale renewable energy projects. CfDs were introduced in 2014, with projects and funding being allocated in allocation rounds held every few years. The latest - "AR7" - is the seventh round, which is taking place currently. The cost of financing CfDs is applied to energy suppliers and is called the Supplier Obligation.[102]

During each CfD allocation round, the government sets an administrative strike price cap for each technology, which developers bid below. Each round has "pots" for different technologies: offshore wind, solar, and tidal, and contracts are awarded in order of lowest cost until the budget is used up. All winning projects in this pot receive the same strike price, which is determined by the highest-priced project needed to clear the auction.

Once set, this strike price is the guaranteed price per MWh for 15 years, adjusted each year for inflation from the 2012 benchmark. Once the contract is signed with the Low Carbon Contracts Company (LCCC), the government-owned arm's-length body responsible for administering CfDs, the generator starts producing, the strike price is compared to a reference market price.

If the market price is higher, the generator pays the LCCC the difference, and if the market price is lower, the LCCC pays the generator the difference. The LCCC funds payments through a levy on electricity suppliers which are then transferred onto the consumers through bills.

As a result, CfDs and wholesale prices have an inverse relationship. When wholesale prices rise above the strike price, generators pay back the difference, reducing costs for consumers and

resulting in “negative CfD” costs. This happened in 2022-23 when wholesale prices skyrocketed due to the Ukraine war.

The most recent CfD round - “AR7” - will increase electricity prices

For the next round of allocations, AR7, the maximum strike price is £113 per MWh - well above the average wholesale electricity price.[103] This higher strike price reflects rising supply chain and financing costs in the offshore wind sector, which makes up the majority of projects in AR7.

This will consequently lead to higher consumer bills as the LCCC, and subsequently the consumer, will have to pay more in order to top up to the strike price. Also, as more CfD-backed generation comes online and more contracts are signed, more electricity is paid for at these higher guaranteed prices so the combined overall cost of CfDs will increase.

The cost to households of CfDs

For the average 2025 household, CfDs cost £33 and comprise 3% of the average household bill. In 2030, the annual cost is projected to rise to £70 and will comprise 6% of the average bill. By 2030, the impact of CfDs on the average household’s bills is projected to rise by 176% compared to 2019.[104]

Hinkley Point C is funded as part of the CfD scheme and is expected to add £1bn to Britain’s energy bills annually.[105] The nuclear power plant, which is being built in Somerset and scheduled for completion in 2030, is projected to cost the average household around £20[106] (£2025) in 2030. This means Hinkley is expected to comprise 2% of the average household energy bill in 2030, and makes up close to a third of the costs borne by CfDs.

It is argued by supporters of the CfD-funded renewables model, such as the current Energy Secretary, that they help to protect households from volatile gas markets, as when the wholesale price of electricity (which is usually set by the price of gas) rises above the CfD strike price, the generator in receipt of the CfD will pay back the difference to the LCCC, and the surplus is passed on to consumers as a credit.

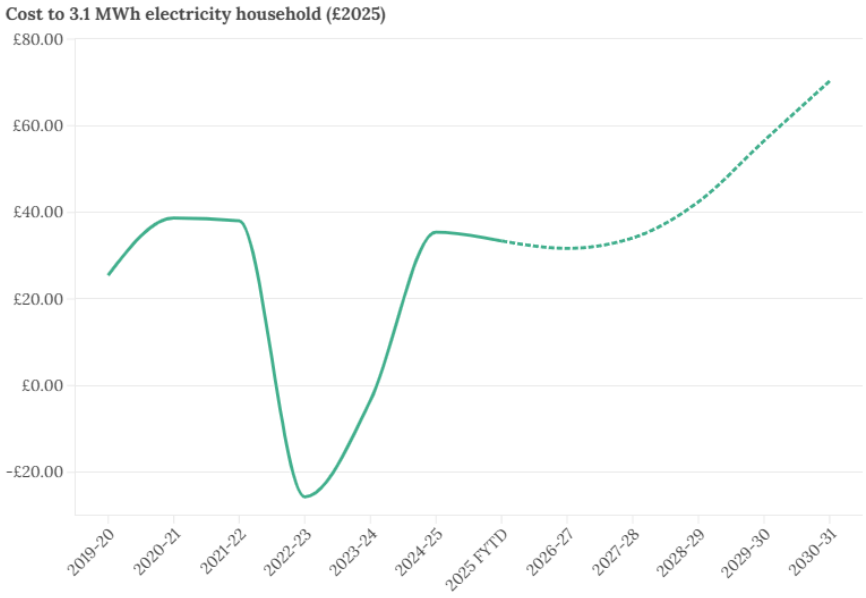
However, when the wholesale price of electricity falls (due to lower gas prices, for example), consumers remain locked in to the CfD strike price, meaning they cannot benefit from advantageous conditions. Furthermore, the more renewables facilities come online, the more CfDs are issued and the higher the pass-through cost via the Supplier Obligation.[107]

Finally, the credit to the LCCC, passed through to households via the Ofgem price cap, is not experienced by consumers immediately, and may not compensate fully for the spike in wholesale energy prices, since gas sets the marginal price - electricity generated by CfD price mechanisms only represent around one-third of overall energy generation.[108]

- **Cost to Average 2025 Household**: £33 (3% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £70 (7% of household energy bill)

Figure 19: Impact of Contracts for Difference on electricity bills for an average 3.1 MWh domestic household, 2019–2031.

Source: *Electricity Bills UK*[109]



The UK Capacity Market (CM)

This is a scheme that pays generators to guarantee that they can supply power at times of high demand. The CM allows these generators, mostly gas and nuclear plants, to earn payments at a fixed kWh rate for supplying electricity at times when demand is high. If these generators fail to deliver when called on then they face penalties.

During times of high demand, known as System Stress Events, NESO - the public corporation responsible for managing the gas and electricity networks - issues generators with a Capacity Market Notice (CMN) to alert generators to potential shortfalls. CM contracts are allocated through annual auctions where generators bid to provide capacity, with those offering the lowest-priced bids winning.

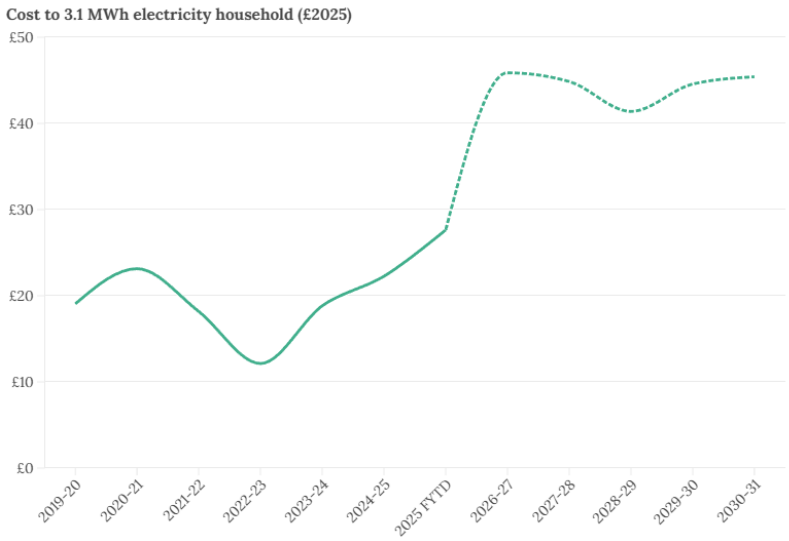
The scheme is funded through charges on electricity suppliers, which are passed on to consumers via their bills. CM prices look set to increase dramatically over the next few years.[110]

For the average 2025 household, the CM costs £28 and comprise 3% of the average household bill. In 5 years, the cost is projected to rise to £45 and will comprise 4% of the average household bill.

- **Cost to Average 2025 Household**: £28 (3% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £45 (4% of household energy bill)

Figure 20: Impact of the Capacity Market on electricity bills for an average 3.1 MWh domestic household, 2019–2031.

Source: Electricity Bills UK[111]



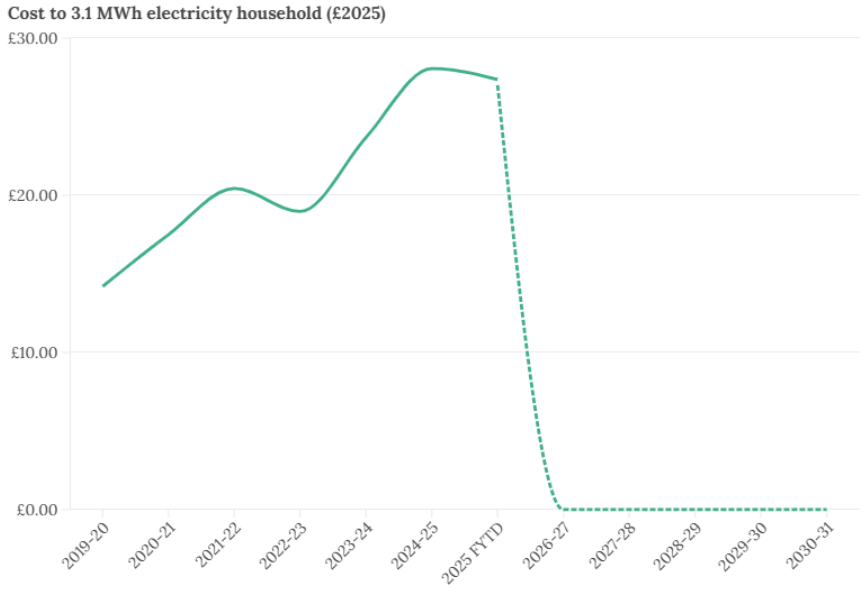
Energy Company Obligation (ECO)

There are several smaller policy costs that contribute to household bills. The Energy Company Obligation (ECO), a charge that obliged energy companies to fund for home installations resulting in reduced energy usage for low-income households, currently costs the average household £27 per year and was due to be scrapped after April 2026 as per the government's Autumn budget. However, it has since been extended to December 2026 as the government has not been able to fully design a successor scheme yet.[112]

- **Cost to Average 2025 Household**: £27 (3% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £0 (0% of household energy bill)

Figure 21: Impact of Energy Company Obligation on electricity bills for an average 3.1 MWh domestic household, 2019–2031.

Source: *Electricity Bills UK*[113]



The Warm Home Discount

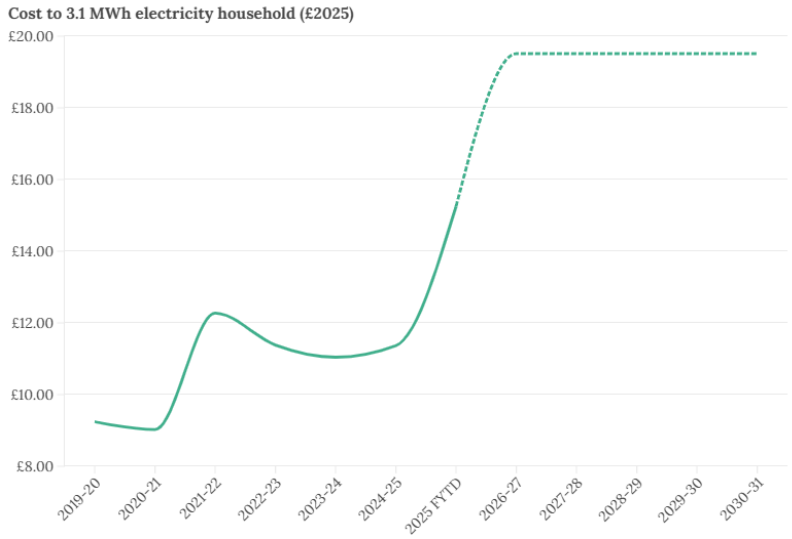
The Warm Home Discount (WHD) provides support to customers in receipt of certain low income benefits in the form of a rebate. This rebate, along with the costs of operating and administering the scheme, is funded through a levy on energy suppliers, which is ultimately passed on to consumers through energy bills.

Recent changes to the WHD have broadened eligibility to all households on Universal Credit, rather than just those with larger, older or otherwise energy inefficient homes, and the rebate has been increased from £140 to £150, alongside an Industry Initiatives element which provides additional support. As the cost of funding the scheme is recovered through a levy on consumer bills, this expansion has actually increased costs for all households. This means that someone who was already receiving the WHD now receives less support once levy costs are factored in.

- **Cost to Average 2025 Household**: £15 (2% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £20 (2% of household energy bill)

Figure 22: Impact of Warm Home Discount on electricity bills for an average 3.1 MWh domestic household, 2019–2031.

Source: Electricity Bills UK[114]



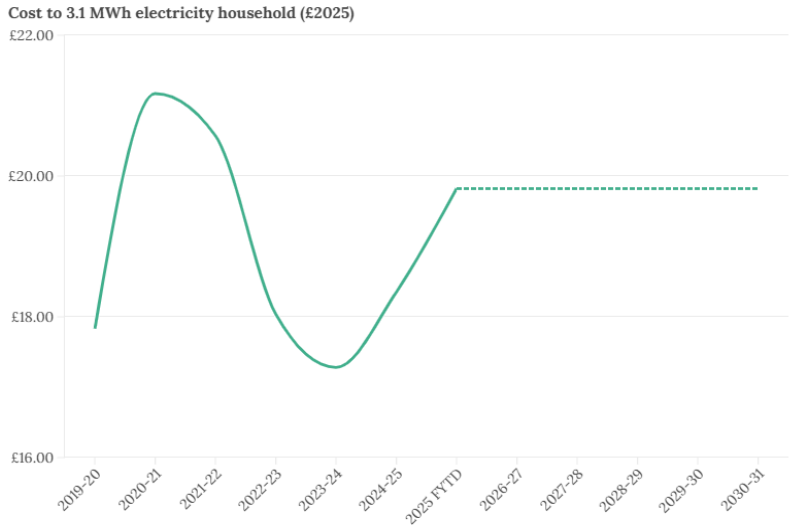
Smart Meter Charge

The Smart Meter Net Cost Charge helps to fund the installation of smart meters across the country. It cost the average household £20 in 2025, and this cost is anticipated to remain broadly stable through to 2030.

- **Cost to Average 2025 Household**: £20 (2% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £20 (2% of household energy bill)

Figure 23: Impact of Smart Meter Charges on electricity bills for an average 3.1 MWh domestic household, 2019–2031.

Source: *Electricity Bills UK*[115]



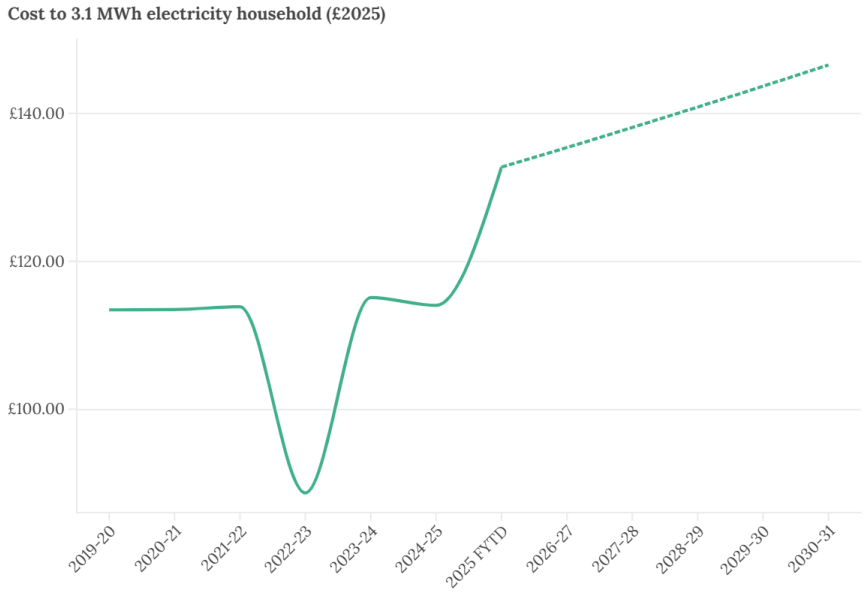
Supplier margin and costs

This is the cost suppliers levy on households to recover their operating costs, such as customer service, billing, and other administrative activities. These costs are partly recovered through the standing charge and have increased in real terms over the past five years.

- **Cost to Average 2025 Household**: £133 (14% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £147 (14% of household energy bill)

Figure 24: Impact of supplier operating costs and profit margins on electricity bills on an average 3.1 MWh domestic household, 2019–2031.

Source: *Electricity Bills UK*[116]



Green Gas Levy

This places an obligation on all licensed fossil fuel gas suppliers to pay a quarterly levy which is calculated based on the number of meter points they serve. It funds the injection of biomethane into the gas grid, the Green Gas Support Scheme. Exemptions are available for suppliers who can prove their total gas supply is 95% biomethane or more.

This is a separate levy from the electricity market and applies to suppliers' provision of gas directly to households and businesses for heating, gas cooking and in various industrial processes. It is a more recent levy, introduced only in 2021.[117] While it currently funds and incentivises carbon-neutral gas it also adds to household bills by imposing a levy on suppliers that is directly passed on.[118] It would in legislative terms be relatively straightforward to remove, though the government would need to find a way out of existing funding commitments to investors in green gas projects.

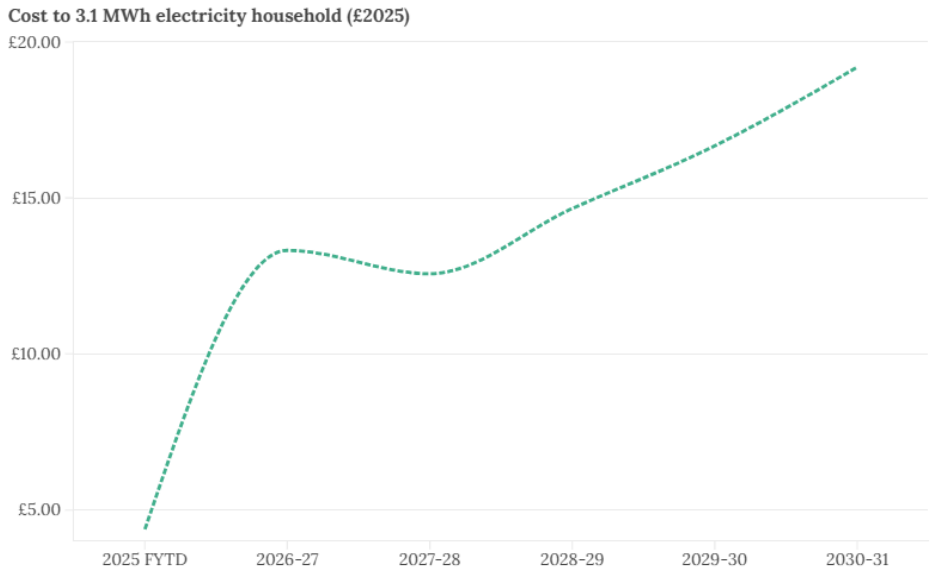
Sizewell C levy

Sizewell C, the nuclear power station being built in Suffolk, is being funded using the Regulated Asset Base (RAB) model, through which investors recover costs through a charge on consumer bills during the construction phase, reducing the need for high-interest loans and lowering the long-term cost of the project. This has an impact on households: the Sizewell C RAB levy costs the average 2025 household £4 per year, but this cost is projected to increase to £19 per year by 2030.[119]

- **Cost to Average 2025 Household**: £4 (1% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £19 (2% of household energy bill)

Figure 25: Projected cost of Sizewell C levy on electricity bills for an average 3.1 MWh domestic household, 2025-2031

Source: *Electricity Bills UK*[120]

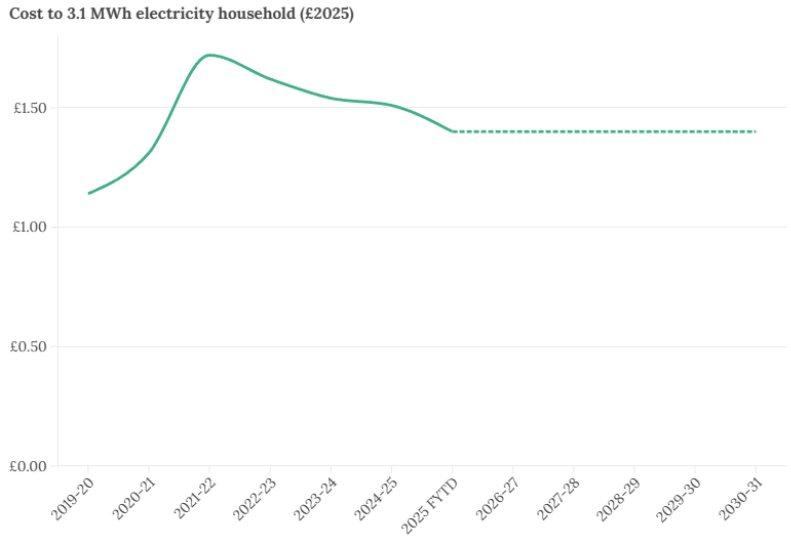


Assistance for Areas of High Electricity Distribution Costs (AAHEDC)

This levy subsidises the high costs of distributing electricity in Northern Scotland, has minimal impact on households, costing the average household only £1 per year.[121]

- **Cost to Average 2025 Household**: £1 (<1% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £1 (<1% of household energy bill)

Figure 26: Impact of Areas with High Electricity Distribution Costs (AAHEDC) on electricity bills for an average 3.1 MWh domestic household, 2019–2031.
Source: *Electricity Bills UK*[122]



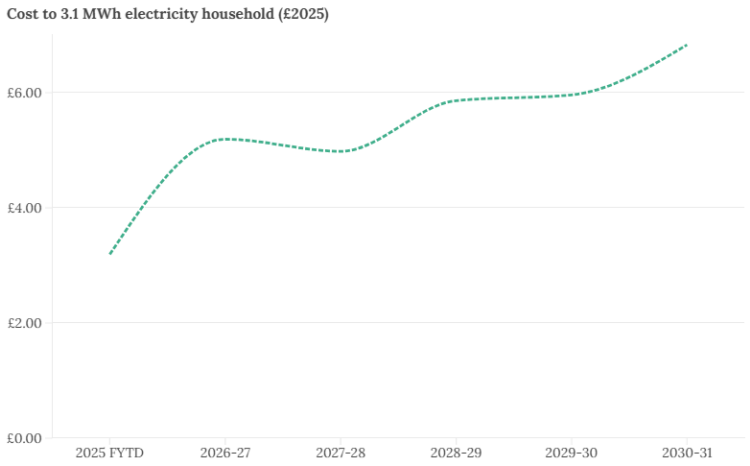
Network Charging Compensation (NCC) Scheme and the Energy Intensive Industry (EII) Support Levy

The Network Charging Compensation Scheme helps to relieve levy costs on Energy Intensive Industries. This costs the average 2025 household £3 and is projected to rise to £7 by 2030.[123] This scheme specifically offsets the high costs of maintaining the physical electricity grid, protecting heavy manufacturers like steel and chemical plants from international price competition by shifting a portion of their network fees onto the wider consumer base.

- **Cost to Average 2025 Household**: £3 (<1% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £7 (1% of household energy bill)

Figure 27: Projected cost on electricity bills for an average 3.1 MWh domestic household of Network Charging Compensation Scheme / Energy Intensive Industry (EII) Support Levy, 2025-2031

Source: *Electricity Bills UK*[124]



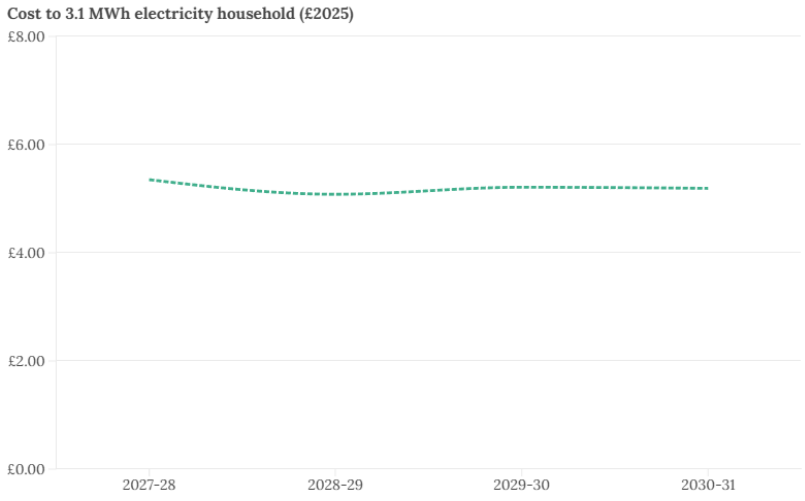
Extra levy share to support heavy industry

This is a levy designed to reduce costs on heavy industry as part of the British Industry Competitiveness Scheme (BICS), which will come into force in 2027. The cost to households is estimated to be £5.[125]

- **Projected (Real Terms) Cost to Average Household 2030**: £5 (1% of household energy bill)

Figure 28: Projected cost of BICS levy on electricity bills for an average 3.1 MWh domestic household, 2027-2031

Source: *Electricity Bills UK*[126]



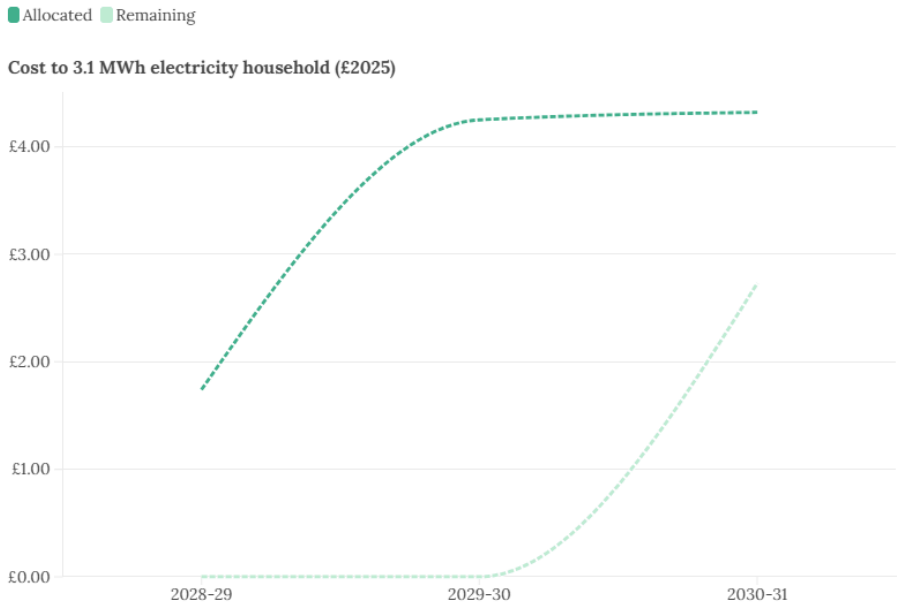
Carbon Capture Storage projects (CCS)

This subsidises innovation and investment in carbon capture and storage technology. The per household cost is estimated to be £4 by 2030 for those projects that have already been allocated funding, including one in Teesside that is due to open in 2028.[127]

Around two-thirds of Department for Energy, Sustainability, and Net Zero (DESNZ) CCS funding remains unallocated. Any future projects are likely to come online post-2030, as they would first need to secure planning consent and financing before becoming operational. The annual estimated cost to the average household is £3.[128]

- **Projected (Real Terms) Cost to Average Household 2030**: £7 (1% of household energy bill)

Figure 29: Projected cost of Carbon Capture Storage projects (CCS) on electricity bills for an average 3.1 MWh domestic household, 2028-2031
Source: *Electricity Bills UK*[129]



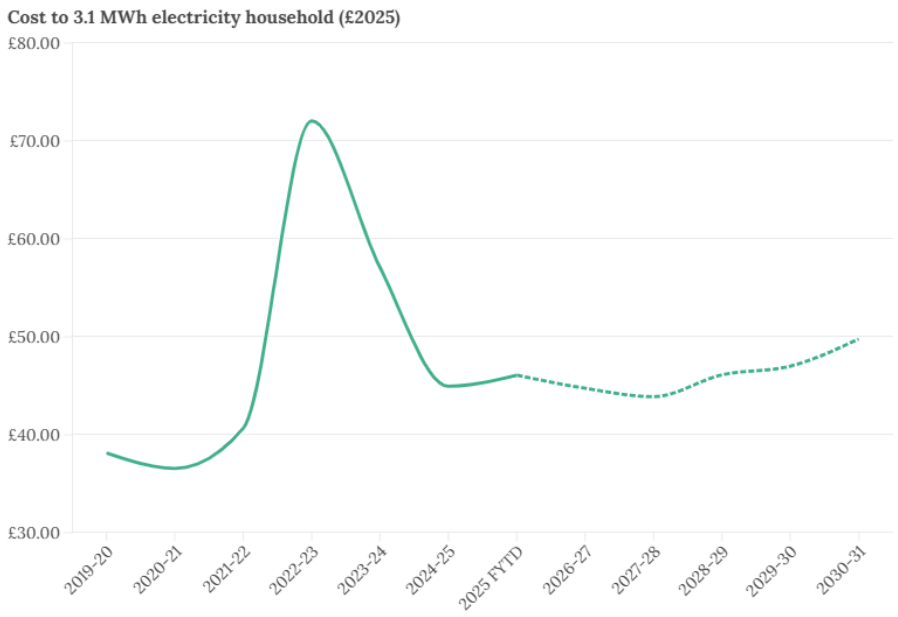
VAT

Household electricity and gas bills are subject to VAT at 5%, applied to the total bill after all costs have been included.

- **Cost to Average 2025 Household**: £46 (5% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £50 (5% of household energy bill)

Figure 30: Impact of VAT on electricity bills for an average 3.1 MWh domestic household, 2019–2031.

Source: *Electricity Bills UK*[130]



Network charges

These are the fees for using and maintaining the grid infrastructure that transports gas and electricity across the country, and for ensuring that supply meets demand at any given time.

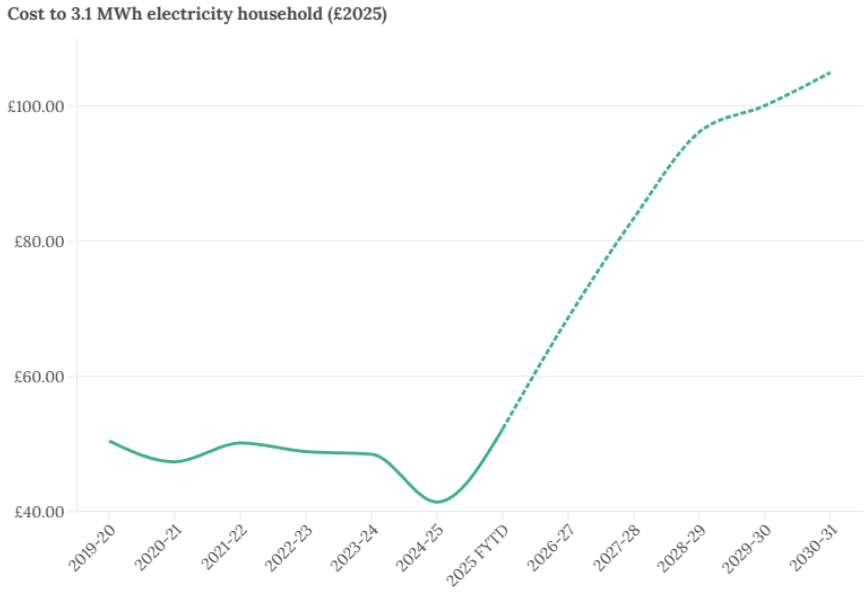
The main charges are Transmission Costs, Distribution Costs, and Balancing Costs.

Transmission Costs (TNUoS)

This is the cost to move electricity across long distances, moving power from generators to regional distribution systems. TNUoS charges are also used to fund the maintenance costs of high-voltage transmission infrastructure, such as pylons, substations, and other major infrastructure.

- **Cost to Average 2025 Household**: £52 (5% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £105 (10% of household energy bill)

Figure 31: Cost to households of Transmission Costs (TNUoS) through bills, 2019-2031
Source: *Electricity Bills UK*[131]



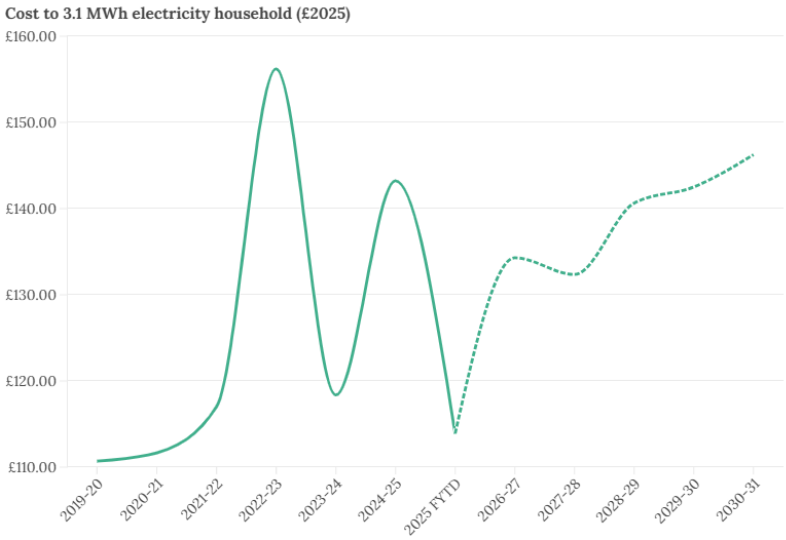
Distribution Costs (DUoS)

DUoS is used to fund the maintenance and operation of the local electricity network, including wires, poles, transformers, and other essential infrastructure. This ensures electricity is safely stepped down from the high-voltage transmission network and safely delivered to homes and businesses across the country.

- **Cost to Average 2025 Household**: £114 (12% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £146 (14% of household energy bill)

Figure 32: Cost to households of Distribution Costs (DUoS) through bills, 2019-2031

Source: Electricity Bills UK[132]



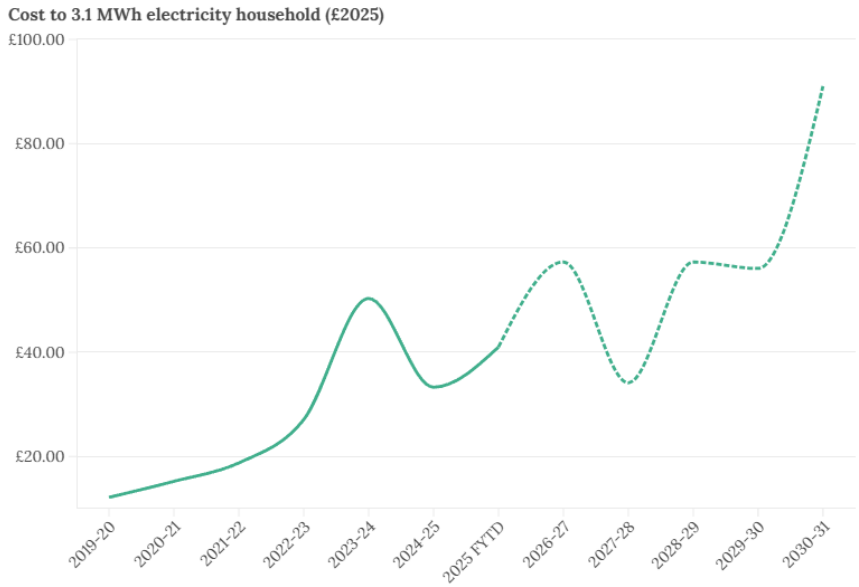
Balancing Costs (BSUoS) - consumers pay suppliers to switch off

Electricity system balancing costs are levied by the Energy Systems Operator (ESO) for balancing supply and demand on a second by second basis. Costs are used to ensure that the grid has enough power at all times and does not get overloaded. This is because electricity cannot yet be stored economically and at sufficient scale, so the system must be "balanced" to maintain a stable frequency.

Balancing costs are essentially the cost of energy intermittency, as energy sources are turned on and off. This is subsidised by the taxpayer and British industries.

- **Cost to Average 2025 Household**: £41 (4% of household energy bill)
- **Projected (Real Terms) Cost to Average Household 2030**: £91 (9% of household energy bill)

Figure 33: Cost to households of Balancing Costs (BSUoS) through bills, 2019-2031
Source: *Electricity Bills UK*[133]



Curtailment payments

There are two types of constraint costs: Curtailment costs (turn-off), and replacement costs (turn-on). Curtailment costs involve cases where generators - usually wind farms - are paid to turn off because the grid cannot physically transmit the amount of power they are producing. Replacement costs, meanwhile, are costs involved with turning generators on - usually Combined Cycle Gas Turbines (CCGTs) - during times when the grid does not have enough power. These costs are part of the wider balancing (BSUoS) costs administered by suppliers and passed onto consumers through bills.

NESO uses forecasting models to estimate future constraints and balancing costs. Forecasts are turned into fixed BSUoS tariffs, which are passed onto suppliers who then pass the costs onto consumers. Paid to turn on gas, paid to turn off wind.

Wind farms are turned off at times when the grid has lots of electricity, and the transmission cables cannot physically transmit the amount of power being produced.

Therefore, as transmission costs are higher in Scotland (these are further away from the demand for power) it tends to be the big Scottish wind farms that are paid to turn off.

Producers under the CfD and RO schemes are paid strike price regardless, even if they stop producing because they tell NESO they will only stop production if they are compensated to the amount they would have received had they kept generating. So BSUoS costs are essentially spent on topping them up to the strike price when they are not generating as the grid would be overloaded if they did.

This means there is no incentive for wind farms to buy batteries and store lost power. It just gets wasted.

Turn-on costs

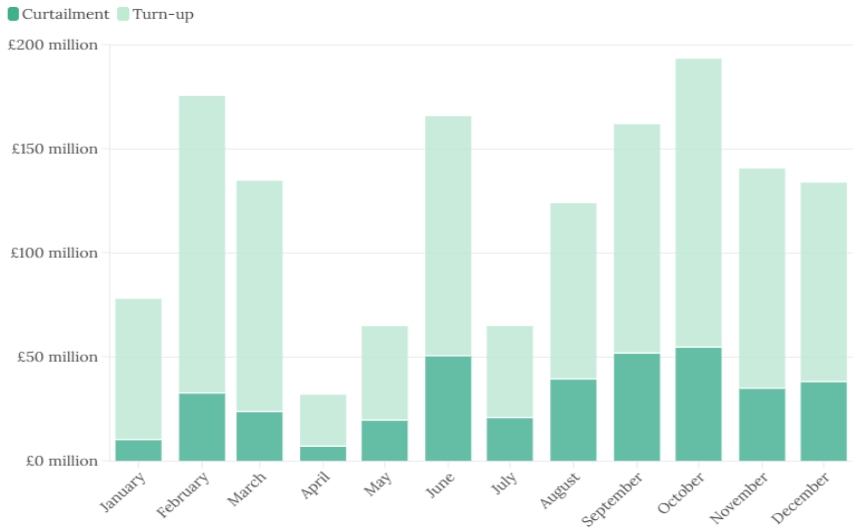
BSUoS turn-on costs slightly different to the Capacity Market. The CM is a cost paid to generators to ensure they are available to provide power when called upon. BSUoS turn-on costs are the funds they are paid by unit of power provided when called upon.

An alternative model is the Firm Power Auction, first proposed by Professor Dieter Helm in his 2017 *Cost of Energy Review*.[134] This system would scrap CfDs and the Capacity Market in favour of a single unified auction. Instead of being paid for generating electricity when the wind blows, all types of generators, renewables, nuclear, and fossil fuels, would bid to supply *firm* power.

Firm power, electricity that can be delivered reliably whenever it is needed, would require generators to guarantee their output incentivising renewable generators to invest in battery storage or demand-side response technology, ensuring that they bear the costs of intermittency and not consumers.[135]

Figure 34: Estimated 2025 constraint costs by month

Source: GB Renewables Map[136]



Seagreen offshore wind farm, which lies off the coast of Dundee and is one of the biggest wind farms in the UK, had 64% of its potential power curtailed over the past two years.[137] Viking wind farm in the Shetlands also had 64% of potential power curtailed.[138]

In December 2024, 81% of potential power from Seagreen was curtailed, amounting to approximately 407,000MWh of power wasted.

The total curtailment and turn-up cost so far in 2025 has been £1.36 billion, or 9,034 GWh.[139]

Recommendations

End the Renewables Obligation and Feed-in-Tariffs. These are due to be wound down but should immediately be removed as levies on suppliers that are passed on to households.

No further Contracts for Difference auction rounds for wind and solar should be held. AR7 should be the last round of CfDs. After this, renewables generators should operate by selling electricity into the wholesale market. The Hinkley Point CfD should remain.

The RAB for Sizewell C should be retained unless and until an alternative funding mechanism can be found. Nuclear will become an increasingly important share of the UK energy mix and the current funding mechanism is important for project financing and delivery.

CfD contracts should be renegotiated or ended on a structured run-off basis. Investors losing out as a result would be able to recover a percentage of their loss, depending on the length of the contract, with a firm cap as a percentage of original project capital expenditure. Indexed gilts could be used as a compensation mechanism instead of up-front cash.

Contracts for Difference and the Capacity Market should ultimately be replaced with a Firm Power Auction system. This proposal, supported by Professor Dieter Helm in his Cost of Energy Review, would end the socialisation of investment risk and the cost of intermittency being passed on to consumers. This will be explored in a further Onward report.

3. How policy costs affect consumers of energy

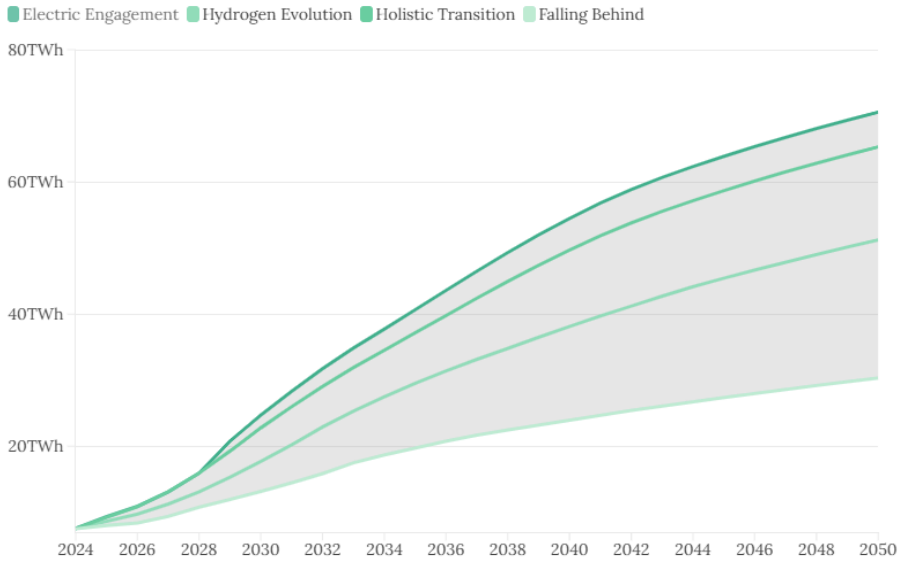
Climate policies target industrial energy users

Policies to incentivise the shift to net zero through decarbonisation have targeted industrial users of energy particularly, both through direct taxation and through carbon pricing mechanisms. These policies are intended to reduce emissions production and incentivise efficiency, but they also increase production costs, disproportionately harm industries that are by definition carbon-intensive, weaken industrial competitiveness and reduce overall economic output.[140]

Examples of industries that are necessarily carbon-intensive, including iron and steel, process chemistry and the wider chemicals sector, cement, glass and ceramics manufacturing and oil refining.[141] These industries are emitting by nature, not as a matter of discretion. And frontier technology sectors of the future such as AI data centres, quantum computing, life sciences research and pharmaceutical production are all energy-intensive, something that was not envisaged when climate change policies were first adopted.

Yet despite the energy-intensive nature of innovation frontier industries, and the inherently carbon-intensive nature of various important production sector industries, the UK policy framework has made industrial electricity more expensive, and deliberately targets carbon-intensive industries with carbon pricing and the Climate Change Levy.

Figure 35: Projected Data Centre energy consumption
Source: NESO[142]



The industrial unit cost of UK energy is frequently ranked the highest in the EU or G7, and historically have ranged between 17% and 49% above the International Energy Area median.[143] This punishes existing industries while providing a powerful deterrent to investment.

This is a function of high unit costs as a result of constrained supply and of direct taxes on energy use.

Figure 36: 2024 Industrial gas and electric prices in pence per kWh (including taxes)
Source: DESNZ[144]

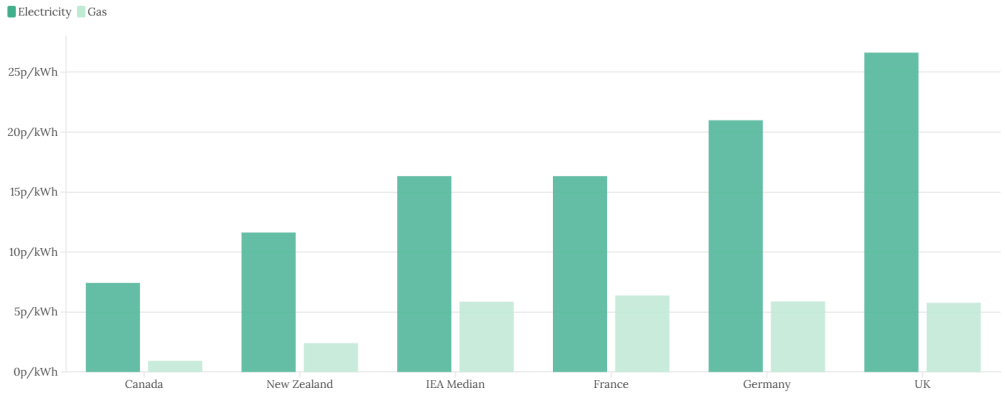
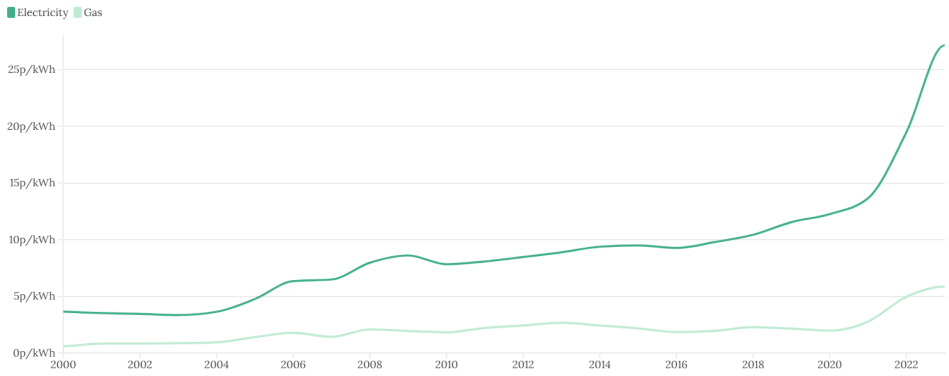


Figure 37: UK Industrial gas and electricity prices in pence per kWh (including taxes)
Source: DESNZ[145]



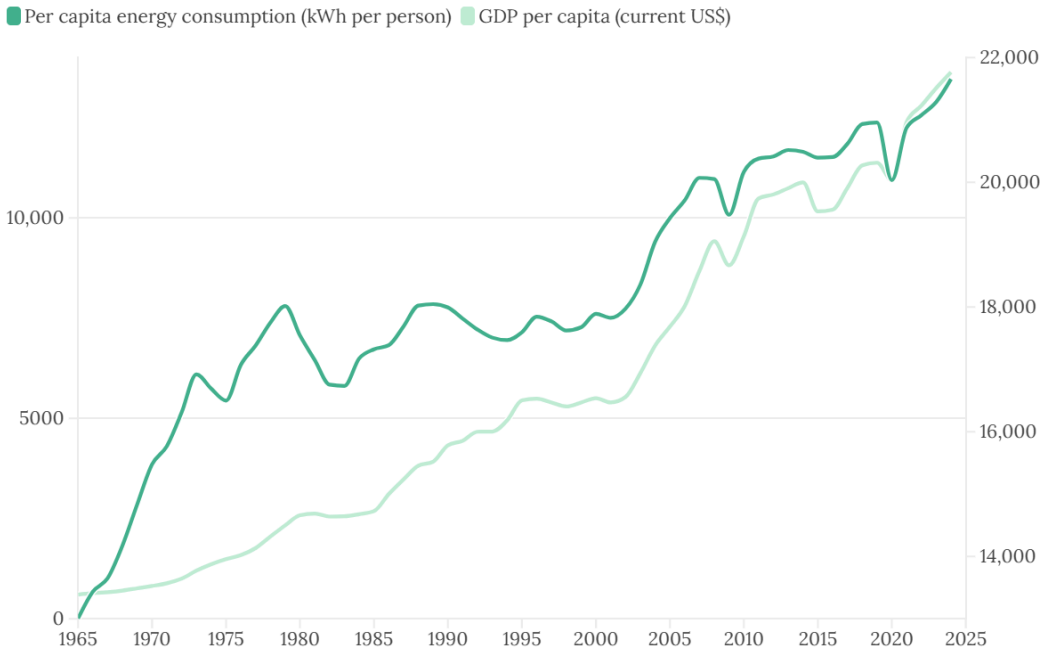
The Climate Change Levy targets industrial energy users

This tax is charged to non-household users of energy, primarily industrial users. This includes manufacturing businesses and heavy industries but also the wider commercial sector, including the public sector.

It is charged on a per-kWh basis and is explicitly designed to make commercial energy use more expensive to incentivise energy efficiency and reduce emissions.[146] This tax is a good example of the bad underlying philosophy behind UK energy policy: rather than achieving an economically sustainable energy transition through innovation and technology, it explicitly aims to reduce economic activity.

It has been assumed so far that reductions in energy use can be achieved while reducing overall energy consumption. However, international comparisons of GDP per capita growth and per capita energy consumption suggest otherwise. Rather, per capita growth and energy use track each other very closely.[147]

Figure 38: World per capita energy consumption and world GDP per capita
Source: *World Bank*[148] *and Our World In Data*[149]



Impact of the Levy on industry

Energy demand in heavy industry, and in energy-intensive frontier industries such as data centres, is generally inelastic, limiting the scope for energy use-limiting behavioural change. It also applies to both electricity and gas, so electrification does not provide an escape. This is perverse since incentivising a shift to cleaner energy was the original goal, not killing off industrial output.

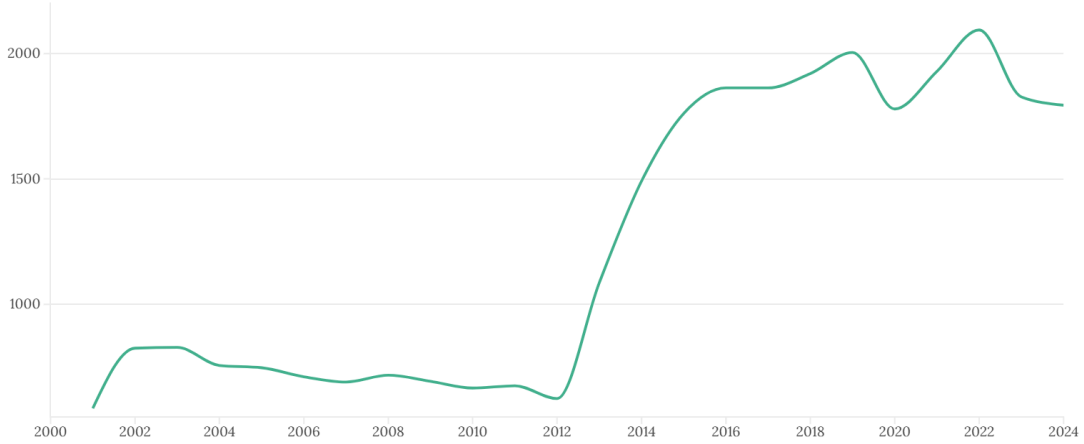
Figure 39: Impact of Climate Change Levy (CCL) on industrial electricity prices
Source: Onward Analysis and ONS[150]

High energy prices are the number one cause of factory closures and industrial job losses in the UK, where energy-intensive industry (EII) output fell by a third between 2021 and 2025, hitting a 35-year low.[151]

Accrued receipts from the Levy skyrocketed first from 1999 and then 2012, but have flatlined since 2019, most likely because economic activity has stalled.[152]

Figure 40: Climate Change Levy Receipts

Source: ONS[153]



The pace of UK deindustrialisation has been alarming, with manufacturing output, gross value added (GVA) and share of GDP collapsing.[154] Manufacturing's share of national income is now below 9%, well below other European and G7 comparators.[155]

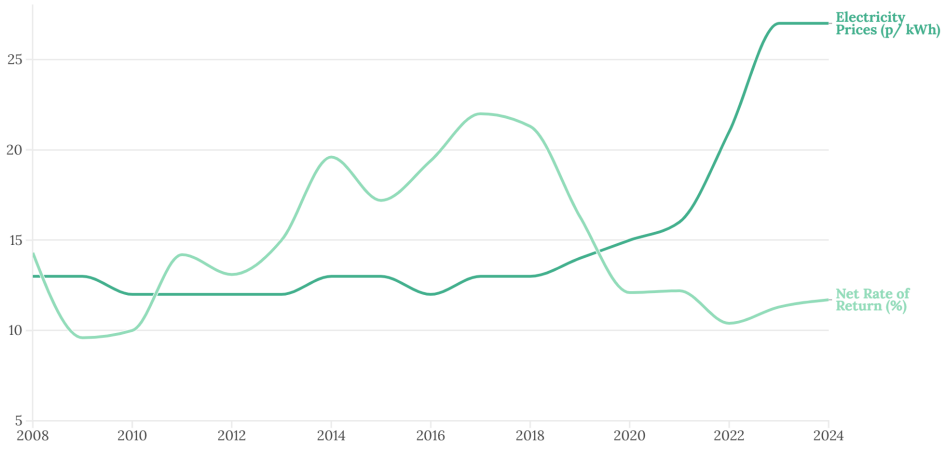
This is particularly alarming given the outsized contribution of production sector jobs, including manufacturing, mining and extraction, to national gross value added. These sectors employed 445,000 people in 2023, accounting for just 1.4% of total employment. But they had a collective gross-value added (GVA) of £57bn, 2.5% of national GVA. This makes the average production sector job 77% more productive than average employment.[156]

Figure 41: Energy-intensive manufacturing industries gross value added (GVA), 1990-2025, Index 2015 = 100

Source: ONS[157]

Figure 42: Industrial electricity prices (per kWh) and the Net Rate of Return for Manufacturers (%), 2024 prices, 2008-2024

Source: ONS[158] *and* DESNZ[159]

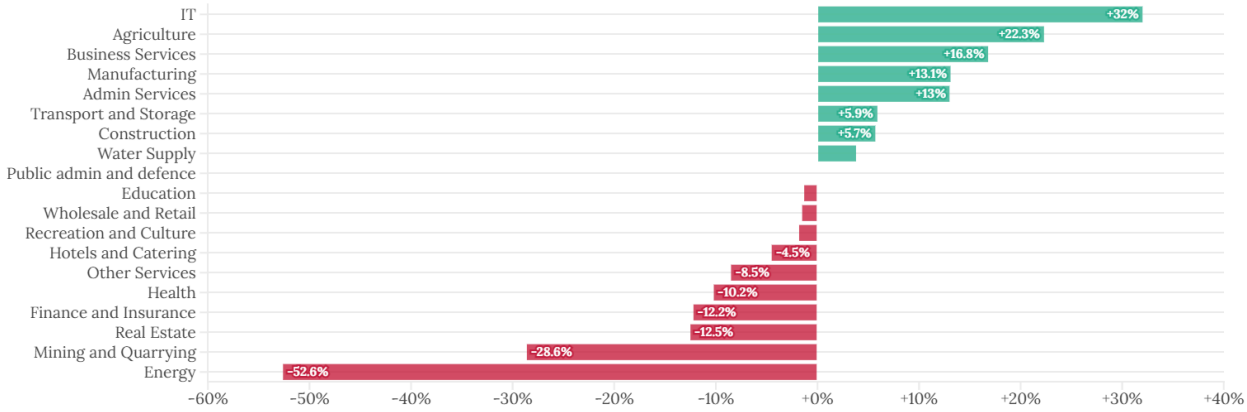


**Electricity prices (p / kWh) have been adjusted for inflation*

The energy sector is also the worst-performing in the UK over the past six years. While Gross Value Add (GVA) per hour worked has increased by 2.8% across the whole UK economy, it has dramatically declined when it comes to the energy sector, falling by 53%.

Figure 43: UK productivity change by sector - 2019 to 2025 (Output per hour worked calculated as GVA per hour worked)

Source: Economics Observatory[160]



Reliefs for EIIs - partial and temporary

Some qualifying EIIs benefit from exemptions from the Levy if they comply with Climate Change Agreements (CCAs).[161] However, even with CCAs electricity is taxed at 10% of the headline Levy rate and gas at 35%, and relief is conditional on meeting efficiency targets and is time-limited. Industries outside the CCA framework pay the full Levy.

These reliefs are welcome, but they are conditional and partial exemptions from an unnecessary tax. Even at the lower relief rate, the Levy still disincentivises industrial energy consumption by increasing costs. Furthermore, temporary policy relief mechanisms do not provide certainty for businesses and their investors to make long-term investment decisions. For many industries, any loss of the reliefs would be devastating in terms of marginal costs.

UK Emissions Trading System (ETS) - an EU hangover

The other major state-imposed policy driving up the cost of energy is the Emissions Trading System (ETS), largely carried over from Britain's membership of the EU ETS. This is another policy designed to drive up the cost of energy by forcing carbon emitters to surrender allowances for every tonne of CO_2 emitted, or to purchase additional allowances under a trading mechanism at a cost, either at auction or on the secondary market.

The UK price is £57 per tonne compared to £69 per tonne in the EU.[162] The UK is obliged to operate an effective carbon pricing system under the terms of the EU-UK Trade and Co-operation Agreement (TCA).[163]

The ETS applies to oil and gas producers, electricity generators and heavy industry, plus carbon-intensive sectors like aviation. Industrial users eligible to pay ETS are therefore liable for their own carbon costs and also for the passed through costs of carbon pricing that applies to producers.[164]

Even households and industrial energy users who are not eligible to pay ETS themselves therefore experienced the pass-through costs, meaning energy inflation from ETS is built in through the supply chain.

ETS reliefs are limited

As with the Climate Change Levy, the government provides compensation mechanisms for qualifying industrial users for costs arising from ETS. This compensation is paid for out of general taxation. Some energy-intensive industrial users also receive a certain portion of their allowances for free, with the aim of preserving competitiveness and preventing "carbon leakage", the process by which carbon-emitting production is simply moved offshore for no environmental gain.[165]

Once again, the problem with the relief schemes is that they are limited to certain qualifying industries, partial and temporary. The same disincentives to long-term investment therefore still apply, and UK industry is made less competitive as a matter of policy compared to jurisdictions that do not operate a similar carbon pricing system.

Recommendations

Phase out the Climate Change Levy. This should be immediate and permanent for electricity, where carbon is already priced further up the supply chain, and should be removed for gas until there is an economically sustainable alternative energy mix.

Establish permanent CCL exemptions immediately for EIIs and trade-exposed sectors to prevent carbon leakage. The offshoring of industrial production and therefore of emissions places domestic net zero targets over economic rationality. This must be stopped instantly, even if the CCL is phased out more gradually.

Alternatively, apply the CCL only to industries with genuine options for greater energy efficiency. Identify sectors where energy efficiencies are possible and desirable, rather than applying the CCL to sectors where large scale energy consumption is non-discretionary.

Establish a permanent, wide-sweeping ETS exemption and compensation mechanism for all EIIs. These sectors are strategically important and should never pay ETS, and should be given relief for pass-through ETS costs affecting electricity generators.

Implement a phased removal of the ETS. There is no domestic legal necessity in operating a state-based carbon pricing mechanism. Rather, decarbonisation efforts should be

market-led, and policies to incentivise it should be based on investment reliefs like full-expensing, not deterrents. The UK should seek to renegotiate its carbon pricing commitments under the EU TAC.

Appendix 1

Calculations using data from UK Electricity Bills 2030[166] and Scrap Carbon Taxes[167]

Key Assumptions:

• Gas sets the marginal price 97% of the time (demand-weighted share)

Source: Zakeri et al (2023)[168]

• CfD volumes are not netted off in our calculations, as CfD generation is concentrated in high-renewable hours when gas is less often marginal, and a simple volumetric net-off would overstate the offset from carbon-price effects.

• UK ETS price is approx £60 / tCO_2

Source: Onward Analysis of ICAP Auction Results.[169]

• CCGT emissions intensity is 0.4 tCO_2 / MWh_e. This is calculated by taking the 0.2 tCO_2 / MWh value and assuming a 50% efficiency so multiplying it by 2 to get 0.4 tCO_2 / MWh_e.

Source: UNFCCC[170]

• The average UK Household uses 3100 kWh (3.1 MWh) of energy / year.

Source: Ofgem / Ben James[171]

Calculation

CPS cost = £7.20 / MWh

UK ETS Cost = £24.00 / MWh
(£60.00 £ / tCO_2 auction cost × 0.4 tCO_2 / MWh_e CCGT emissions intensity)

Total carbon tax cost = £31.20 / MWh

£31.20 / MWh = £0.03120 / kWh

0.03120 × 3100 (benchmark annual consumption) × 0.97 (97% gas sets price assumption)

= **£93.82** / year

Appendix 2

Calculations using data from UK Electricity Bills 2030[172] and Scrap Carbon Taxes[173]

Cost of wholesale to average household = £324.05
Cost of Carbon Taxes to average household = £93.82

£324.05 - £93.82 = £230.23

£93.82 ÷ £230.23 = 0.41

= **41%**

Appendix 3

Calculations using data from UK Electricity Bills 2030[174] and Scrap Carbon Taxes[175]

CPS cost = £7.20 / MWh

£7.20 / MWh = £0.0072 / kWh

0.0072 × 3100 × 0.97 = **£21.65 / year**

UK ETS Cost = £24.00 / MWh

£24.00 / MWh = £0.024 / kWh

0.024 × 3100 × 0.97 = **£72.17 / year**

Appendix 4

Calculations using data from UK Electricity Bills 2030[176] and Scrap Carbon Taxes[177]

Ben James FY26-27 projections estimate that the average 3100 kWh household will spend £939.44 per year on energy.

His projected costs for Renewables Obligation + Feed in Tariffs + Contracts for Difference + Capacity Market + Sizewell C + Extra levy share post-NCC + VAT (5%) = £190.72.

£190.72 + £93.82 (our 24/25 estimates for Carbon Tax costs) = £284.54

£284.54 ÷ £939.44 = **30%**

Appendix 5

Calculations using data from UK Electricity Bills 2030[178] and Scrap Carbon Taxes[179]

Carbon Taxes cost = £93.82 per year

VAT cost for 2025 = £46.08

£93.82 + £46.08 = £139.90

£139.90 ÷ £967.77 (2025 total cost) **= 15%**

Endnotes

1. Climate Change Committee, link
2. A study by the Centre for Climate Change and Social Transformations, commissioned by the Climate Change Committee, revealed that "substantial change" in household behaviour would be needed for the UK to reach its net zero by 2050 target, with 60% of reductions in consumption needing to come from households, see CAST, link
3. Our World in Data, *Energy Use per Person vs GDP per Capita*, link
4. It should be noted that energy policy is largely devolved in Northern Ireland, but for ease the term "UK" has been used throughout this report.
5. Projected figure for 2026-27, Onward analysis
6. Onward Analysis (see Appendix 1), and Electricity Bills UK, link
7. Kilowatts, GB Electricity Demand: Two Lost Decades, LinkedIn analysis link
8. Office for National Statistics, *Impact of Higher Energy Costs on UK Businesses 2021–2024*, link
9. O'Brien, N., *British Energy Policy Part 1: Unilateralism*, link
10. Our World in Data, *Per Capita Electricity Generation*, link
11. Our World in Data, *Energy Production and Consumption*, link
12. Our World in Data, *Energy Production and Consumption*, link
13. Our World in Data, *Per Capita Energy Use*, link
14. Open Access Government, *Nuclear Power: The Safer and Cheaper Alternative to Fossil Fuels*, link
15. Next Kraftwerke, *What Does Merit Order Mean?*, link
16. Scrap Carbon Taxes Campaign, link
17. National Energy System Operator, *Constraint Payments Explained*, link
18. House of Commons Library, *Energy Prices and Bills*, SN04046 Briefing Paper, link
19. Littlechild, S., *Electricity Market Reform*, Cambridge Judge Business School Energy Policy Research Group, link
20. Office for Budget Responsibility, *A History of Natural Gas in the UK*, link
21. Littlechild, S., *Electricity Market Reform*, Cambridge Judge Business School Energy Policy Research Group, link
22. Office for National Statistics, *Energy and emissions in the UK*, link
23. See House of Commons Library, *Energy Policy: An overview*, link
24. International Energy Agency, *United Kingdom Energy Mix* link
25. Definition of dispatchable power generation sources capable of rapid ramp-up or shutdown to meet demand fluctuations.
26. Deloitte, *Why Britain Pays More for Electricity*, Deloitte UK link
27. International Energy Agency, *United Kingdom Energy Mix*, link
28. Carbon Brief, *UK Emissions Fall 3.6% in 2024*, link
29. Carbon Brief, *UK Coal Phase-Out Interactive Analysis*, link
30. World Nuclear Association, *France Country Profile*, link
31. Aberdeen & Grampian Chamber of Commerce; BBC News, *North Sea Tax Policy Coverage*, link
32. British Progress, *Cut Bills, Boost Electrification by Removing Carbon Costs*, link
33. Ember, *Electricity Data Explorer*, link
34. Mining.com, *China Coal Output Hits Record in 2025*, link
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