



BRIEFING PAPER

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Energy policy: an overview

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Summary

Energy in the UK

Energy is a broad term encompassing a range of different fuels and end uses. Electricity, heating and transport fuels are all forms of energy used across the sectors of the UK economy, including the domestic, business, and industrial sectors. Various different fuels and technologies are used to produce the energy consumed in the UK, including both domestic production and imports.

Electricity provides a relatively small proportion of the UK's energy consumption. However, the evolution of technologies that produce UK electricity, and the importance of electricity for the future of the UK energy sector, has meant that electricity is often the focus of policy. As such the Library's papers on energy policy, summarised in this paper, often focus on policy related to electricity.

Energy policy basis

Energy policy in the UK is the responsibility of the Department for Business, Energy and Industrial Strategy (BEIS). Although there are numerous regulators for specific parts of the energy sector, much of the energy market is regulated by Ofgem.

Historically, parts of energy generation, transportation, and supply were run by the public sector. Most of the market is now privatised; generation and supply are competitive, and transportation through networks is regulated as the operators are monopolies.

The Government and Ofgem continue to regulate the market for customers, and deliver policy to meet the Government's aims on energy.

The energy policy of successive Governments has centred around three objectives of security, affordability, and decarbonisation. This is sometimes referred to as the energy 'trilemma'.

Timeline of reports

This paper includes a timeline of some of the recent key policy developments in the UK energy industry. Since 2017, energy policy has largely been made in line with the Government's Clean Growth Strategy.

At the end of 2020, a Ten Point Plan for a Green Industrial Revolution and an Energy White Paper were published with new policies and commitments across many aspects of the energy system including consumers, power, the energy system, transport, buildings, industrial energy, and oil and gas.

Summary of papers

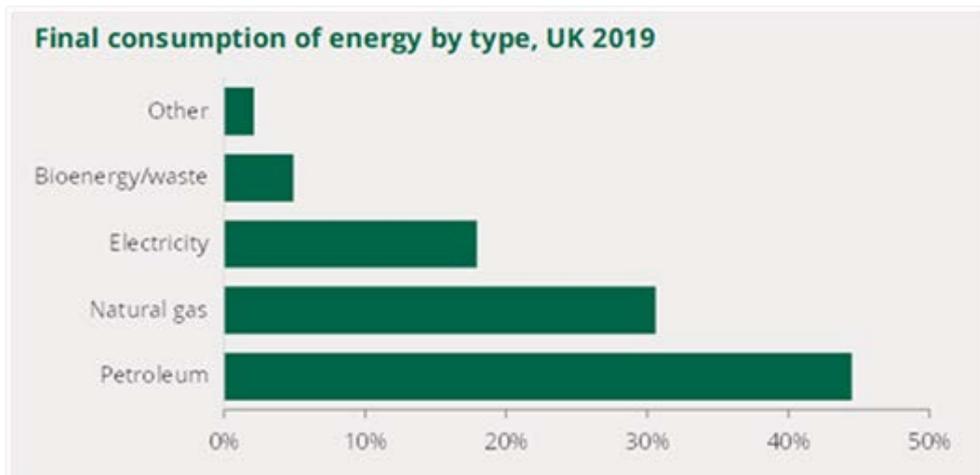
The Library has published various briefing papers, debate packs, and insights covering different aspects of energy policy. This paper includes summaries and links to these papers, where more detailed information can be found.

1. Energy in the UK

Energy comprises a range of different fuels and end uses. Electricity, heating and transport fuels are all forms of energy used across the sectors of the UK economy, including the domestic, business, and industrial sectors.

Various fuels and technologies are used to produce the energy consumed in the UK. The UK is a producer of energy, such as oil and gas, and domestically generated electricity from numerous sources. Although the UK exports some oil, gas, and electricity, the level of imports to meet the UK's energy needs is greater, meaning the UK is a net energy importer.

The chart below¹ details the fuels used for final energy consumption in the UK across all sectors. Natural gas is often used for heating, and petroleum is widely used in transport.² Various technologies generate the electricity consumed in the UK, as set out in the next graph.



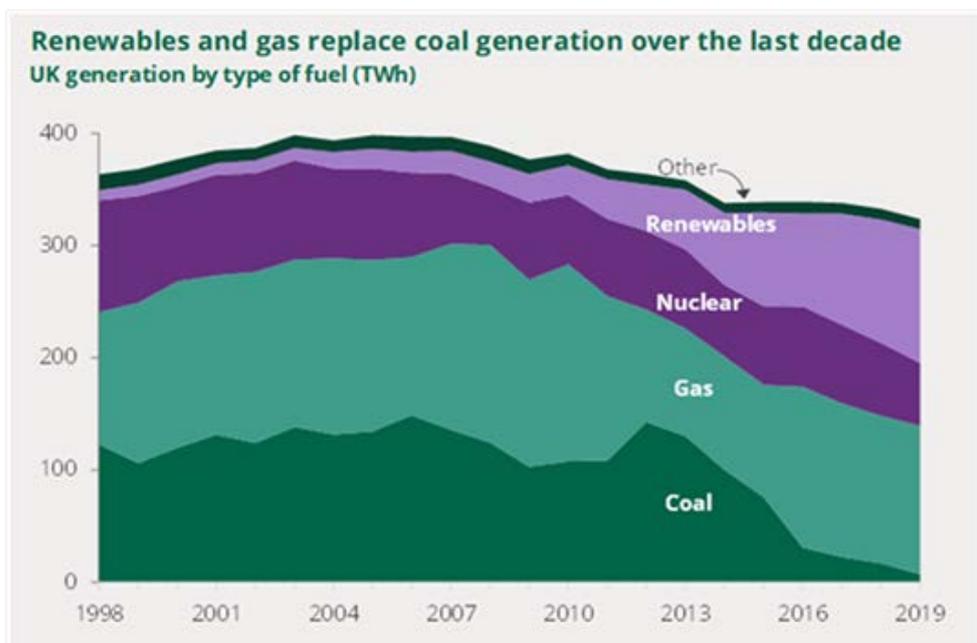
Source: BEIS, [Energy Trends](#), table 1.3, June 2020

As the graph above shows, electricity provides a relatively small proportion of the UK's energy consumption. However, the evolution of technologies that produce UK electricity, and the importance of electricity for the future of the UK energy sector, has meant that electricity is often the focus of policy. As such the Library's papers on energy policy, summarised in this paper, often focus on policy related to electricity.

¹ In the Energy Consumption by fuel type graph 'Other' refers to fuels such as coal and other solid fuels.

² Petroleum, the biggest sector of the consumption above, is primarily used in transport. As such policy related to petroleum is often undertaken by the Department for Transport, rather than the Department for Business, Energy and Industrial Strategy. Publications on transport are available from the Library website section on [Transport](#).

The graph below shows the electricity mix for electricity generation in the UK over time.³ Coal, which historically provided a large proportion of the electricity mix is declining, and renewables are growing.



Source: BEIS, [Energy Trends](#), table 5.1, June 2020

In addition to electricity, other broad areas of demand for energy are heat and transport. As discussed above, these areas of demand are currently largely fuelled by natural gas or petroleum. However, some parts of the heat and transport sectors are beginning to use more electricity, such as electric heating and vehicles. This is adding to demand for low-carbon electricity.⁴ The difference between energy and electricity is set out in Box 1 below.

Box 1: Energy vs Electricity vs Power

Energy and electricity are sometimes conflated and referred to interchangeably. However, electricity is only one form of energy as the graph above shows. For example a country may be described as having a high proportion of renewables in its energy mix, but usually it is the electricity mix that is being referred to, and the proportion of the energy mix that is renewable is much lower. Power is also often used in this area – e.g. the power sector, a power plant. The difference between the terms is set out below:

Energy: energy is defined as the capacity to do work. There are several types or forms of energy, such as kinetic, light, sound etc. The main types relevant for energy policy are electrical energy, heat energy, nuclear energy, and chemical energy (e.g. fuels). Energy cannot be created or destroyed, only transformed from one form to another. For example, a wind turbine transforms the kinetic energy of wind into electrical energy, and a car engine turns chemical energy in its fuel into kinetic energy to

³ Full details of energy consumption in the UK (including the fuels used to supply heat and transport demand) can be found in the Government's [Energy Consumption in the UK](#) report, or the [Digest of UK energy statistics](#) report, both published annually.

⁴ National Grid, [Future Energy Scenarios](#), 2020

move. While various units are used depending on the type of energy discussed, the main unit of energy is the Joule.

Electricity: As above, electrical energy is a type of energy. Electricity results from charged particles that can either be static or flow as a current - i.e. to our homes. Electrical energy can easily be converted into other forms of energy, such as light in a lightbulb.

Power: in physics, energy is the capacity to do work, and power is the rate at which the work is done. The unit of power is the Watt, equal to one Joule per second. Electrical appliances have their power ratings represented in Watts (e.g. lightbulbs), and electrical generators (often known as power plants) have their capacity to generate measured in a magnitude of Watts e.g. kilowatt KW (1000W) or megawatts MW (1000KW). This *capacity* is different from the actual electrical *output* or generation of the power plant which incorporates the power produced over a unit of time, resulting in the unit watt-hour (Wh). Most power plants do not operate at 100% capacity at all times for various reasons.

In energy policy, power tends to refer to electrical power. As such electricity and power are often used interchangeably, including in this paper. However, as set out above, energy and electricity should not be conflated.

1.1 History of the energy market

Since the Industrial Revolution when demand for energy soared, the UK's energy sector has changed significantly. From an early reliance on coal, the discovery of oil and gas in the North Sea led to a shift in the sector and the growth of associated industries such as refining. Today a further shift is occurring with the focus on low-carbon sources of energy.⁵

While much of the UK energy market was once publicly owned and run, most of the sector was privatised around the 1980s.

The generation, transportation and supply of gas and electricity in GB⁶ was privatised with the *Gas Act 1986*, and the *Electricity Act 1989*. The Government also sold its shares in companies such as British Petroleum.⁷

The energy supply market has since entered a period of liberalisation with new suppliers entering the market and establishing competition for customers. Energy network owners and operators, though privatised, are regulated monopolies.

The 1980 Acts also provided for the creation of regulators. Today, the Office of Gas and Electricity Markets ([Ofgem](#)) regulates the energy market.

There are some additional regulators for specific parts of the market. These include the Office for Nuclear Regulation ([ONR](#)) for the mostly privatised nuclear industry, and the [Oil and Gas Authority](#) with a role of regulating whilst also promoting the extraction of UK oil and gas.

⁵ National Grid, [The history of energy](#). [accessed 10 August 2020]

⁶ Energy policy is largely devolved to the Northern Ireland Executive, and the sector has different characteristics to those in Great Britain.

⁷ For more information, see the Library briefing papers on [Privatisation](#) (November 2014) and [Public ownership of industries and services](#) (May 2018)

1.2 Energy market stakeholders

There are many stakeholders in the energy market across its different parts. This includes stakeholders for producers of energy, such as oil and gas, nuclear, or the renewable industry, transporters of energy, and the suppliers/sellers of energy.

Conventionally for the consumer market, electricity and gas is produced or generated by producers/generators, who sell the electricity or gas to suppliers in the wholesale market. Suppliers then sell to consumers in the retail market. The energy is transported by gas and electricity grids which are owned and operated by regulated companies.⁸

There is also a role for third parties such as brokers in these trades, and for the operators of the networks which transport electricity.

Increasingly, this market is becoming more complex, as consumers begin generating and consuming their own power – known as prosumer. There are further stakeholders for the supply of transport fuels.

For all sectors of the energy market, there are also think tanks, charities, and industry bodies who comment on energy policy. Building energy infrastructure also involves other bodies such as the Environment Agency and planning authorities.

1.3 BEIS departmental objectives

The Department for Business, Energy and Industrial Strategy (BEIS) was formed in July 2016, from merging the Department of Energy and Climate Change and parts of the Department for Business, Innovation and Skills. The new department has a wide policy remit. BEIS leads government policy on: business, industrial strategy; science, research and innovation; energy and clean growth; and climate change.

In November 2019, the National Audit Office (NAO) published [*Business, Energy and Industrial Strategy: Departmental Overview*](#), which provides an overview of BEIS and its strategic objectives. On energy, the overview states:

The Department is responsible for energy policy and for ensuring the UK meets statutory targets for reducing greenhouse gas emissions. Its energy-related strategic objectives are to:

- ensure the UK's energy system is reliable and secure;
- deliver affordable energy for households and businesses; and
- support clean growth and promote global action to tackle climate change.⁹

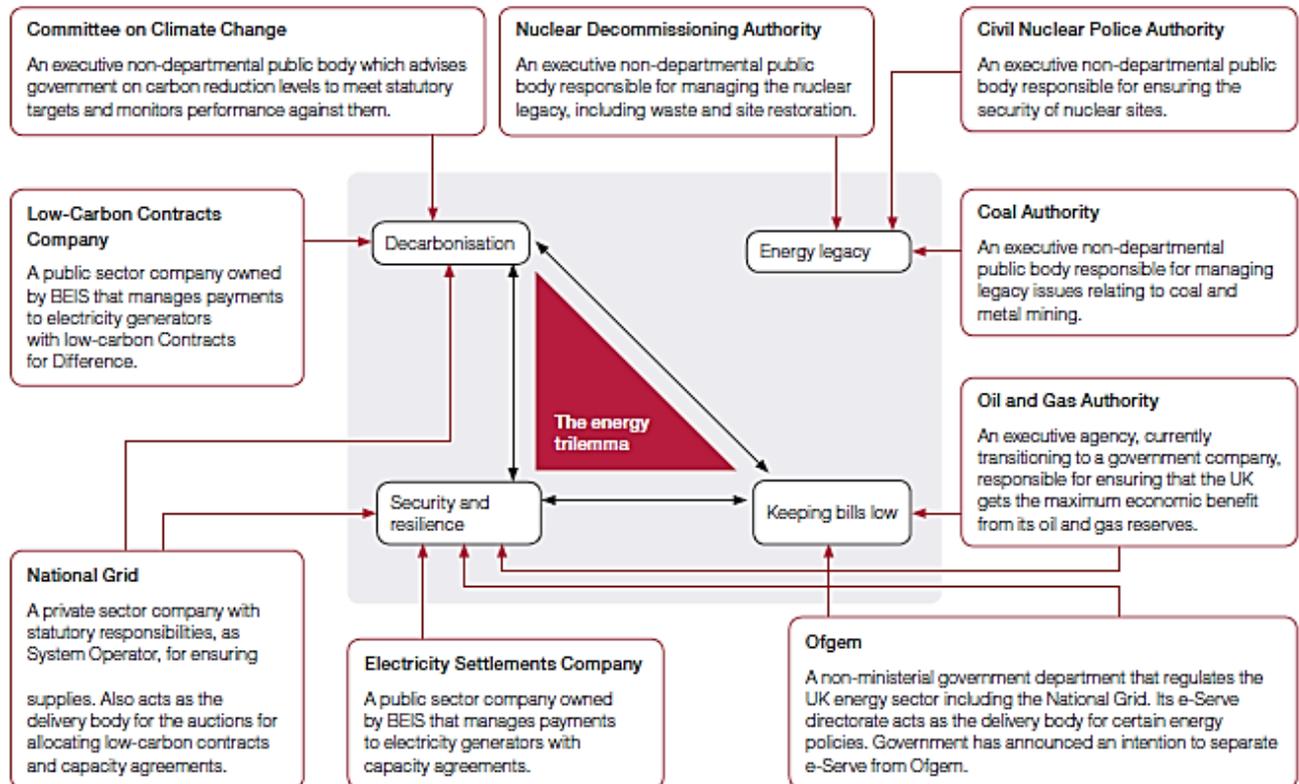
⁸ This includes the transmission grid, owned and operated by National Grid, and regional distribution network operators (for electricity) or gas distribution networks (for gas). For more information see the Library briefing paper on [Electricity grids](#) (January 2020)

⁹ NAO, [Business, Energy and Industrial Strategy: Departmental Overview](#), November 2019

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Achieving a balance between these three objectives of security, affordability, and decarbonisation, is sometimes referred to as the energy 'trilemma'.

The 2016 NAO Departmental overview¹⁰ provided the following graphic of the trilemma, and the BEIS organisations involved with each objective:



¹⁰ NAO, [Business, Energy and Industrial Strategy: Departmental Overview](#), September 2016

2. Why is energy policy needed?

The energy policy of successive Governments has been designed in line with the “energy trilemma” to:

- decarbonise electricity generation;
- ensure energy security; and
- minimise the cost of electricity to consumers.

The trilemma is not unique to the UK: the energy policies of countries around the world have been assessed based on how well they are meeting this trilemma. For example the World Energy Council, a UN partner organisation acting as a forum for the global energy transition, publishes an annual [World Energy Trilemma index](#) of how countries around the world are meeting the energy trilemma.

This section will explore each of these aims in turn in relation to the UK. The use of the trilemma in future may be less important for UK energy policy. As section 3.4 sets out, the former Secretary of State for BEIS, Greg Clark, [said in a 2018 speech](#) that the trilemma is coming to an end as low-carbon power reduces in cost:

Cheap power is now green power [...] it is no longer true that when it comes to electricity, you can only choose two of the three things that we really want: green, cheap and secure.

2.1 Energy security

Although the UK produces electricity and gas domestically, the production does not cover all of the UK’s energy consumption, so the UK is also a net importer of energy (electricity, gas and oil).¹¹ In 2018, the UK imported 5.4% of its electricity and 40.7% of its gas. The UK has electricity interconnectors (undersea cables) with several European countries, and gas pipelines from Norway, the Netherlands, and Belgium, and also imports Liquefied Natural Gas (LNG) from countries such as Qatar.¹²

The energy regulator Ofgem and BEIS produce an annual [Statutory Security of Supply report](#) to Parliament. As energy is devolved to Northern Ireland, this report covers England, Wales and Scotland (GB).

On electricity security the 2020 report states:

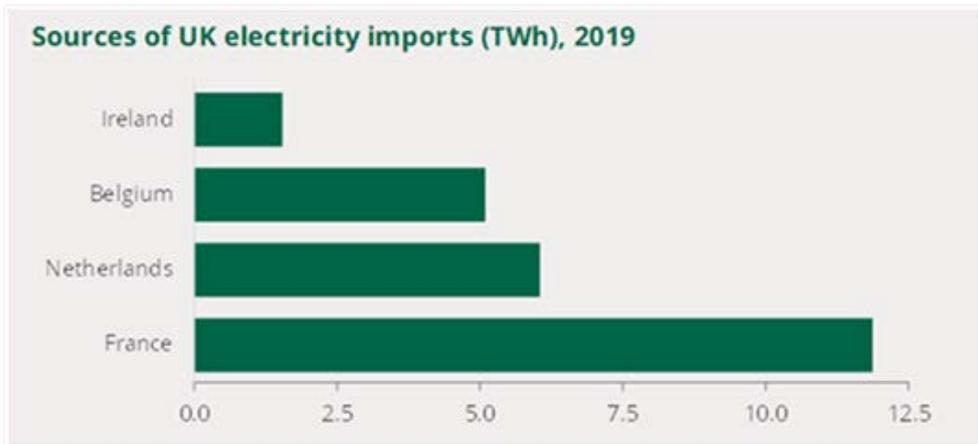
GB’s electricity system has delivered secure supplies to date. The government is committed to moving away from coal and increasing the share of renewables in electricity generation. We are investing in new energy infrastructure and new renewables which will all provide for our domestic energy demand.¹³

¹¹ BEIS, [Digest of United Kingdom Energy Statistics 2020](#), 30 July 2020

¹² BEIS, [Digest of United Kingdom Energy Statistics 2020](#), 30 July 2020

¹³ BEIS and Ofgem, [Statutory security of supply report](#), 2019

The chart below shows the source of electricity imports in 2019. Net imports accounted for just over 6% of its electricity in 2019.¹⁴

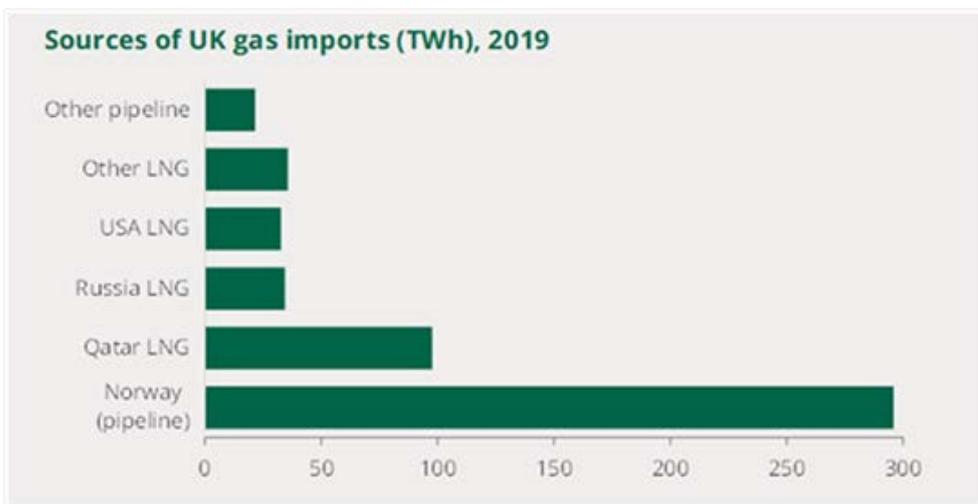


Source: BEIS, [Energy Trends](#), table 5.6, June 2020

On gas security the 2020 report states:

GB’s gas system has delivered securely to date and is expected to continue to function well, with a diverse range of supply sources and sufficient delivery capacity to more than meet demand. The UK Continental Shelf (UKCS) remains a major source of gas in the GB market, with the remainder imported from a variety of sources, including pipelines from Norway, interconnection with the Continent through the IUK and BBL pipelines and some of the largest liquified natural gas (LNG) import infrastructure in Europe. There are a range of future supply outlooks, but all show sufficient gas available from the combination of domestic, regional and global markets.¹⁵

The chart below shows the source of UK gas imports in 2019. Net imports grew as domestic production fell from the end of the last century and have accounted for around 40% of UK gas supply for a few years.¹⁶



Source: BEIS, [Energy Trends](#), table 4.4, June 2020

¹⁴ BEIS, [Digest of United Kingdom Energy Statistics 2020](#), 30 July 2020

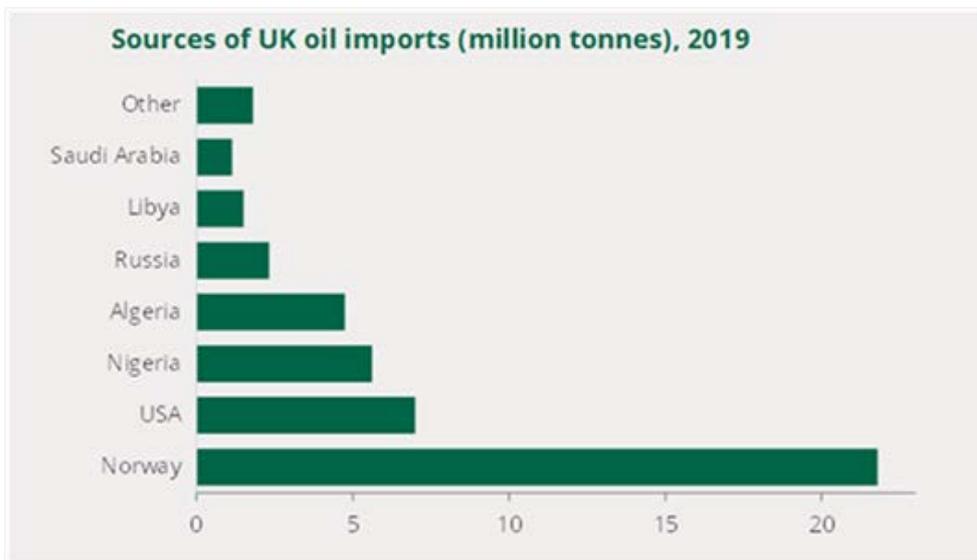
¹⁵ BEIS and Ofgem, [Statutory security of supply report](#), 2019

¹⁶ BEIS, [Digest of United Kingdom Energy Statistics 2020](#), 30 July 2020

On oil security the 2020 report states:

The UK’s oil supply chain continues to deliver security of supply and is expected to continue to function well, with sufficient capacity to meet demand, as well as respond to supply shocks. The UK is well placed in the global oil markets (crude and product), trading extensively in all oil types and with significant import and export infrastructure at coastal locations able to source fuels from around the globe, notably from the Amsterdam-Rotterdam-Antwerp oil hub.¹⁷

Oil is a key fuel in the UK’s energy mix, meeting nearly half of consumer demand in 2019 according to the Government’s Digest of UK Energy Statistics. The majority of this is used for transport including road fuels and for air travel, and oil met 96% of energy used in the transport sector in 2019. As with gas, the decline in domestic production has meant the UK has been a net importer of oil since the early 2000s – the chart below shows the source of 2019 imports.¹⁸



Source: BEIS, [Digest of UK energy statistics](#), table G4, July 2019

2.2 Decarbonisation

Tackling climate change involves two strands of action: mitigating the extent and adapting to the impacts. [Mitigation](#) means efforts to reduce or prevent the emissions of greenhouse gases through a process called decarbonisation. Research shows it is extremely likely that these emissions have led to global warming in a short space of time, which is in turn causing climate change.¹⁹

In addition to international efforts to combat climate change, the UK has domestic legislation and policies in place to reduce greenhouse gas emissions.

The *Climate Change Act 2008* established long term statutory targets for the UK to achieve an 80% reduction in greenhouse gas emissions by 2050 against a 1990 baseline. In 2019, the target was changed to at

¹⁷ BEIS and Ofgem, [Statutory security of supply report](#), 2019

¹⁸ BEIS, [Digest of United Kingdom Energy Statistics 2020](#), 30 July 2020

¹⁹ HC Library insight, [The scientific basis of climate change](#), 24 June 2020

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least a 100% reduction of greenhouse gas emissions relative to 1990, otherwise known as a [net zero target](#).

The targets are translated into five-yearly [carbon budgets](#) which set a total amount of emissions that can be released over the budget period. The Climate Change Committee (CCC) is the statutory body set up to monitor and advise on progress towards the UK's climate targets. To date, the CCC has recommended the levels of five carbon budgets, spanning 2008 to 2032, which the Government has accepted. A sixth carbon budget, covering the period of 2033-2037, was published in [December 2020](#). This recommended a 78% reduction in UK territorial emissions between 1990 and 2035. This is the first budget recommended in line with the net zero target (the previous target was an 80% reduction by 2050).

Between 1990 and 2019, [Government provisional estimates](#) show total UK greenhouse gas emissions fell by 45.2%. The first and second carbon budgets were outperformed, and the Government predicts that the third will also be outperformed. This means the UK emitted less than what was permissible under the budget. However the Government's predictions also project shortfalls against the fourth and fifth carbon budgets. This means it is currently projected that the UK will not have reduced emissions enough to meet these budgets.

A report setting out the Government's proposals and policies for meeting the carbon budgets for the current and future budgetary periods is required under section 14 of the [Climate Change Act 2008](#). The [Clean Growth Strategy](#) was published on 12 October 2017 setting out a "possible pathway" for meeting the fifth carbon budget. Further information on the strategy is set out in section 3.2.

The [CCC's independent assessment of the Strategy](#) (January 2018) praised the Government's strong commitment to achieving the UK's climate targets, but called on the Government to close the gaps it identified in meeting the fourth and fifth carbon budgets.

The CCC also publishes annual progress reports to Parliament. The [2020 report](#) said that although progress had been made, there remained a "policy deficit":

Net Zero has been adopted as a key goal of the Government and the Prime Minister is chairing a Cabinet Committee to deliver it. There were important new announcements on transport, buildings, industry, energy supply, agriculture and land use. But these steps do not yet measure up to meet the size of the Net Zero challenge and we are not making adequate progress in preparing for climate change.

The report also included advice to the UK Government on "securing a green and resilient recovery following the COVID-19 pandemic".

Further information is available in the papers available from the Library webpage on [Climate Change: an overview](#).

Many energy technologies are supported through policy as low-carbon alternatives that can help reduce greenhouse gas emissions. This includes renewables and nuclear power for electricity, heat-pumps,

biofuels and future fuels such as hydrogen for heating, and electric vehicles, hydrogen and biofuels for transport.²⁰

2.3 Affordability

Energy bills for both domestic and industrial consumers comprise various costs including wholesale, network, social and environmental (with exemptions) and other direct costs, as well as VAT and supplier profits. Wholesale costs have historically been the single largest component of bills, and fluctuate with local and global energy costs. Other costs, such as the costs of transporting electricity and gas through networks, are regulated by Ofgem as the network operators are monopolies.

The energy market is competitive, and customers are supposed to switch to get better tariffs. However, the Government has introduced policies to protect the affordability of both domestic and some industrial bills.

For the domestic market, price caps on the cost per unit of energy are currently in force.²¹ These protect certain customers, who are either on the most expensive tariffs, or who have prepayment meters meaning they have fewer options for switching, from overcharging. The Government also intends that other interventions, such as the smart meter roll out, will help make the market more competitive.²² The Government's 2020 Energy White Paper (see below) contained further proposals aimed at creating a fair deal for consumers including consultations on changing aspects of the market such as roll-over tariffs and switching.²³

For certain energy intensive industries there are exemptions from, or compensation available for, some of the social and environmental costs on energy bills. These costs are the result of the fact that several energy policies, such as to support fuel poor homes or renewable generation, are paid for by a levy on consumer bills rather than through taxation. Some industries, such as steel, chemicals, engineering, and brick making require the use of lots of energy. Due to concerns that social and environmental levies were having a financial impact on these industries, the Government has introduced support packages for eligible industries. For background information, see the Library debate pack on [Energy intensive industries](#) (March 2016).²⁴

2.4 The end of the trilemma?

In a speech in November 2018, the then Secretary of State for Business, Energy and Industrial Strategy Greg Clark, said "Cheap power is now

²⁰ For more information see the Library insight on [Mitigating climate change: Electricity and beyond](#), 24 June 2020

²¹ HC Library paper, [Energy bills and tariff caps](#), 13 March 2020

²² HC Library paper, [Energy Smart Meters](#), 7 October 2019

²³ HM Government, [Energy White Paper](#), December 2020. The Library briefing paper on Energy bills and tariff caps will be updated with the Energy White Paper proposals in due course.

²⁴ More recent information is available from the Government's Guidance on [Energy Intensive Industries](#), revised June 2020

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green power [...] the policy conundrum known as “the trilemma” is I think coming to an end”.²⁵

Instead, Mr Clark proposed four principles that he said “can be good guides to strategy in these transformative times for the power sector”:

1. the market principle –we must wherever possible use market mechanisms that take full advantage of innovation and competition
2. the insurance principle – given intrinsic uncertainty about the future, government must be prepared to intervene to provide insurance and preserve optionality
3. the agility principle – energy regulation must be agile and responsive if it is to reap the great opportunities of the smart, digital economy, and finally
4. the “no free-riding principle”: consumers of all types should pay a fair share of system costs

More information on current Government policy is set out below.

²⁵ Gov.uk. [After the trilemma – 4 principles for the power sector](#), 15 November 2018

3. Timeline of energy policy

This section focuses on significant policy changes or reports since the 2010 election; it is not a comprehensive list of all energy policy. The policies listed below have shaped the current energy market, or the current discussion on future energy policy. Background information on some of the history of the market is covered in section 1.1.

3.1 EMR

The Electricity Market Reform (EMR) programme was initiated by the Coalition Government in 2010 through the [Energy Act 2013](#).

The EMR was designed in line with the trilemma, and made two significant changes to how the electricity market works:

- [The Capacity Market](#): a mechanism to secure capacity to cover any potential shortfall in supply during peak periods, by paying for the guarantee that a generation source could be called upon to supply power as and when required. Alternatively, a consumer can be paid to adjust their usage of power (demand-side response) to allow grid operators to manage demand as well as supply. For more information, see the Library paper on [Electricity grids](#) (January 2019)
- [Contracts for difference](#) (CfDs): The Government's primary mechanism for supporting new low carbon power infrastructure such as wind turbines. CfDs work by guaranteeing a set price for electricity – known as a strike price – that generators receive per unit of power output. As the wholesale price of electricity fluctuates, the generator is either paid a subsidy, or pays back, so that they always receive the value of the strike price. The cost, or benefit, is passed on to consumer bills. For more information, see the Library paper on [Support for low carbon power](#) (April 2020)

3.2 Clean Growth Strategy

A report setting out the Government's proposals and policies for meeting the carbon budgets for the current and future budgetary periods is required under section 14 of the [Climate Change Act 2008](#). The Clean Growth Strategy was published on 12 October 2017.

The strategy is aimed at decarbonising the whole economy and included several policy announcements relevant to the energy sector such as domestic and industrial energy efficiency schemes, funding for new technologies such as carbon capture usage and storage, and support for electric vehicles. Information on policies for specific aspects of the energy sector, both from the clean growth strategy and previous and subsequent announcements, are included in Section 4 which provides links to the relevant Library papers.

The Strategy was broadly welcomed by stakeholders, though some highlighted that more policies were needed to meet the carbon budgets.^{26,27}

The CCC published its [independent assessment of the UK's Clean Growth Strategy](#) in January 2018. It concluded that gaps remain to meeting both the fourth and fifth carbon budgets and that these gaps must be closed.

3.3 Cost of Energy Review

In August 2017, BEIS launched an independent review into the cost of energy, led by Professor Dieter Helm, an economist specialising in energy based at the University of Oxford.²⁸

The [Cost of Energy review](#) was published two months later on 25 October 2017.²⁹ It included a number of recommendations to reduce the cost of energy for consumers,³⁰ simplify the interventions in the energy market and minimise the role of the state.

The report received a mixed review, with some praising the ideas of simplifying the energy market,³¹ and others saying there is no evidence to support Helm's ideas³² and that the ideas would not work in practice.³³

The Government responded to Helm's report by launching a call for evidence to assess views on the report's findings and recommendations.³⁴

3.4 Trilemma speech

In November 2018, the then Secretary of State for BEIS Greg Clark made a speech on the future of the energy market in response to the Helm review. Mr Clark suggested that the trilemma was ending:

Here is the present we have all been hoping for. Cheap power is now green power. Thanks to all of our efforts of many people in this room it is no longer true that when it comes to electricity, you can only choose two of the three things that we really want:

²⁶ LSE, [Clean Growth Strategy: Much to praise but many aspirations rather than tangible policy commitments](#), 13 October 2017

²⁷ Energy UK, [Energy UK comments on Clean Growth Strategy](#), 12 October 2017

²⁸ BEIS Press Release, [Independent review to ensure energy is affordable for households and businesses](#), 6 August 2017

²⁹ Dieter Helm, [Cost of energy review](#), 25 October 2017

³⁰ These included a carbon price, combining previous subsidies (which Helm criticised) into a 'legacy bank' and making them a clearly separate aspect of bills, replacing FITs and CfDs with an equivalent firm power auction where the costs of intermittency are included, and creating a default tariff to replace standard variable tariffs based on an index of wholesale costs, other costs, and a supplier profit margin that would be capped.

³¹ Nick Butler, [Lessons from Britain's broken energy market](#), *Financial Times*, 6 November 2017

³² Richard Black, [Helm Review: 'Show your working, please'](#), *Energy and Climate Intelligence Unit*, 26 October 2017

³³ Jocelyn Timperley, [Reaction: Dieter Helm's 'least cost' ideas for meeting the UK's climate targets](#), *Carbon Brief*, 27 October 2017

³⁴ Gov.uk, [Cost of energy review: call for evidence](#), 7 November 2017

green, cheap and secure. The policy conundrum known as “the trilemma” is I think coming to an end.³⁵

Mr Clark proposed transforming the power sector based on new principles. In response to the Helm review, while Mr Clark said there was a need to “accelerate reform” in some areas, and that he found the reasoning of the review “cogent”, he continued that he thought it “unwise to disturb” some existing policies.³⁶

Mr Clark said that the Government would set out more details through a policy paper, and a detailed White Paper would follow in 2019 (see below).

3.5 Ten Point Plan for a Green Industrial Revolution

In November 2020, the Government published [The Ten Point Plan for a Green Industrial Revolution](#). In short, the Government announced new or reiterated funding and support for the following areas:

- 1 advancing offshore wind
- 2 driving the growth of low carbon hydrogen
- 3 delivering new and advanced nuclear power
- 4 accelerating the shift to zero emission vehicles
- 5 green public transport, cycling and walking
- 6 ‘jet zero’ and green ships
- 7 greener buildings
- 8 investing in carbon capture, usage and storage
- 9 protecting our natural environment
- 10 green finance and innovation

The Government state the Plan “will mobilise £12 billion of government investment, and potentially 3 times as much from the private sector, to create and support up to 250,000 green jobs.”

The 10 Point Plan was generally welcomed by stakeholders, though there remains disagreement in policy areas such as nuclear, the extent to which the Government should pursue emerging technologies such as hydrogen, and whether the policy announcements are sufficient for the net zero target. In response to the Ten Point Plan, Carbon brief, a policy news and analysis site, set out a [summary of media reaction](#) to all the proposals.³⁷

³⁵ Gov.uk, [After the trilemma – 4 principles for the power sector, speech by Business Secretary Greg Clark on the future of the energy market](#), 15 November 2018

³⁶ Gov.uk, [After the trilemma – 4 principles for the power sector, speech by Business Secretary Greg Clark on the future of the energy market](#), 15 November 2018

³⁷ Carbon Brief, [Media reaction: Boris Johnson’s ‘10-point’ net-zero plan for climate change](#), November 2020

3.6 Energy White Paper

As noted above, in November 2018 the then Secretary of State set out plans for a white paper, which at the time was planned to be published in 2019.

The Government said that the coronavirus pandemic had impacted the publication of the paper, for example in June 2020 it said³⁸ :

We are currently assessing the impact of Coronavirus on our strategic approach, and how this will impact our plans for publication. We will set out the way forward in due course.³⁹

In December 2020 (following the publication of the Ten Point Plan) the Government published the [Energy White Paper](#).

The Energy White Paper built on previous announcements including those of the Ten Point Plan, and also had new policies and details, with chapters on consumers, power, energy system (including transport) building, industrial energy, and oil and gas. Further details across various sectors are also expected in the coming months as the Energy White Paper promised several consultations and calls for evidence, various sector-specific strategies and consultations. In addition, the Government will respond to the CCC's Sixth Carbon Budget (published in December 2020) in 2021, and has also promised an "overarching net-zero strategy."

Some of the key policies in the Energy White Paper include⁴⁰:

- **Consumers:** various policies aiming to make the energy market "fairer" for consumers. This includes a consultation in 2021 on creating a framework for opt-in switching, a commitment to consider how current market mechanisms (such as auto renewable and roll-over tariffs) could be reformed, greater transparency of the environmental benefits of tariffs marketed as 'green', and extending programs aimed at helping those in fuel poverty (the Energy Company Obligation and Warm Homes Discount schemes – a Fuel Poverty Strategy is expected in 2021).
- **Power:** The Government recognise electricity as "a key enabler for the transition away from fossil fuels and decarbonising the economy cost effectively by 2050". The proposals on power included reiterating a target of 40GW on offshore wind by 2030, alongside 1GW of floating offshore wind and the expansion of other low-cost renewable technologies through the contract for difference scheme⁴¹, reiterating support for the deployment of at least one CCUS⁴² project to be operational by 2030 and putting in place a framework for further projects, reiterating the aim to bring at least one large-scale nuclear project to a Final Investment Decision by the end of this Parliament (subject to clear value for money and relevant approvals), support for innovation through a new Advanced Nuclear Fund and reiterating the commitment to

³⁸ [Work in progress energy white paper delayed until Q1 2020](#), Current News, 16 October 2019

³⁹ PQ52167, [Energy](#), 9 June 2020

⁴⁰ For more information, see HM Government, [Energy White Paper](#), December 2020

⁴¹ See Library briefing Paper on [Support for Low Carbon Power](#).

⁴² See Library briefing Paper on [CCUS](#).

build a commercially viable fusion plant by 2040,⁴³ and further commitments to BECCS, thermal plant conversions, and offshore wind manufacturing infrastructure.

- **Energy Systems:** The Government say a “smarter, more flexible energy system” is essential for delivering energy reliably while ensuring a fair and affordable transition to clean energy. Commitments include a new Smart Systems Plan to be published in Spring 2021, an energy storage competition, opening the monopoly owned onshore electricity network to competitive tendering, supporting the rollout of electric vehicle charging infrastructure, improving offshore generation grid connections, publishing an Energy Data Strategy, consulting on updating the *Gas Act* to help decarbonise the gas network, and commitment to publish in Spring 2021 a plan to decarbonise the UK’s transport system.
- **Buildings:** The paper reiterates existing policies in development, such as the Future Homes Standard, and the target for as many homes to be EPC Band C by 2035 where practical, cost effective and affordable. Other announcements include extending existing schemes such as the Energy Company Obligation (ECO) to 2026, the Warm Homes Discount to 2025/6, and regulations for non-domestic rented buildings to be at least EPC Band B by 2030 where cost-effective.⁴⁴ There are also commitments on heating, such as consulting on ending gas grid connections to new homes by 2025, growing the installation of heat pumps, increasing the proportion of biomethane in the gas grid, new funding for heat networks, and evaluating hydrogen as a heating option.
- **Industrial Energy:** The Government commit to publishing an Industrial Decarbonisation Strategy in spring 2021, reiterates support for the Industrial Clusters, £1 billion to 2025 for deployment of CCUS in two clusters, publishing a Hydrogen Strategy in Spring 2021 along with further support for hydrogen, and a commitment to bring forward details of a revenue mechanism for private sector investment in CCUS and hydrogen. This section of the Energy White Paper also announces a new National Emissions Trading Scheme to begin in January 2021 after the transition period with the EU ends.⁴⁵
- **Oil and gas:** the paper makes a commitment to making the UK continental shelf a net zero basin by 2050 with a new Strategy for the Oil and Gas Authority before the end of 2020 and a “North Sea Transition Deal” by 2021. The commitment on net zero relates to how the North Sea operates, rather than the emissions caused by the fuels it extracts for use; the paper specifically states the Government will maintain a secure and resilient supply of fossil fuels during the transition to net zero emissions.

Despite these announcements, it has been reported that there is a “policy gap” between what has been announced and meeting the UK’s

⁴³ See Library briefing Paper on [New Nuclear Power](#).

⁴⁴ See Library briefing Paper on [Housing and Net Zero](#).

⁴⁵ See Library briefing Paper on [Brexit: Energy and Climate Change](#).

statutory carbon budgets and ultimate net zero target. The policy news and analysis site Carbon Brief summarised the gap:

The government said the measures in its 10-point plan would cut 180m tonnes of CO₂ equivalent (MtCO₂e) by the end of the fifth carbon budget in 2032. Carbon Brief [estimated](#) this would close 55% of the gap to achieving its upcoming budgets.

Accounting for the policies in the new white paper the government has increased that estimate to 230MtCO₂, plus “further savings in other sectors such as transport”.

This would bring the government closer to delivering its upcoming budgets, but would still leave a gap of 101MtCO₂e [...] This does not take into consideration the longer term net-zero target which will require more substantial cuts.⁴⁶

The Government acknowledged this in the Energy White Paper, stating that:

We recognise that more will need to be done to meet key milestones on the journey to net-zero, including our ambition for carbon budget 6, which we will set next year, taking into account the latest advice from the Climate Change Committee.⁴⁷

In addition to new policies and funding announcements, the paper also included the publication of the Government’s energy models. These are developed in house and with academia and perform various functions included producing strategic analyses of decarbonisation and assessing how individual policies will work in practice. The Government said it wanted to increase transparency and collaboration through publishing the models.

Reaction to the Energy White Paper

From a decarbonisation perspective, stakeholders have in general welcomed the publication as an important step in setting out the path to meet the net zero target. However there are mixed views on specific policies, such as support for new nuclear, and a number of significant policy and strategy announcements (including the hydrogen strategy) are to follow.

From a consumer perspective, the consumer charity Citizens Advice said they were looking forward to working with Government on the proposals:

The transition to net zero must be fair and needs to avoid the past problems in the retail energy market, which led to the introduction of the price cap. Testing new ways to tackle the loyalty penalty is the right approach, and we look forward to working with government and Ofgem on helping consumers get a better deal.⁴⁸

⁴⁶ Josh Gabbatiss, [In-depth Q & A: How does the UK’s ‘energy white paper’ aim to tackle climate change?](#) 16 December 2020

⁴⁷ HM Government, [Energy White Paper](#), December 2020, page 15

⁴⁸ Citizens Advice, [Net zero transition needs ‘long-term and coordinated plan to help people understand and engage’ says Citizens Advice](#), 14 December 2020

A summary of the White Paper including some stakeholder views is available from Carbon Brief's article on [In-depth Q & A: How does the UK's 'energy white paper' aim to tackle climate change?](#)

A summary stakeholder views is available in the Business Green (login required) article on [Energy White Paper: The green economy reacts](#).

3.7 HM Treasury interim report on Net Zero

HM Treasury has been undertaking a review of the cost of net zero. This followed reported concern from the then Chancellor Phillip Hammond when the May Government amended the *Climate Change Act* to include a net zero target in summer 2019 that the cost of net zero would hurt public spending and economic competitiveness.⁴⁹ The [terms of reference](#) were published in November 2019.

In December 2020, the Treasury published an [interim report](#) with initial analysis – the final report is expected in 2021.

⁴⁹ Jim Pickard, [UK net zero emissions target will 'cost more than £1trn'](#), *Financial Times*, 5 June 2019

4. Library publications

The Library has published various briefing papers, debate packs, and insights covering different aspects of energy policy. These are summarised and linked below. These publications are up to date as per the date indicated.

4.1 Consumers bills

- [Energy Bills and Tariff Caps](#) (November 2020): The supply and generation of electricity and gas is privatised, and customers can switch supplier for better deals. However, concerns about overcharging led to the introduction of tariff caps (see the Library briefing paper on [The Domestic Gas and Electricity \(Tariff Cap\) Act 2018](#) (August 2018) for more information). This paper includes information on privatisation and the development of the consumer energy market, the breakdown of an energy bill, reviews and reforms of the market, and details of the tariff caps.
- [Energy Smart Meters](#) (October 2019): Smart meters are advanced electricity and gas meters which can offer a range of intelligent functions. Since 2011, successive Governments have pursued a smart meter roll-out. The roll-out, originally due to complete in 2020, has been delayed and in 2019, BEIS under the Johnson Government consulted on a framework that would obligate suppliers to install smart meters to 2024. This paper covers background information on smart meters and the roll-out, details of consumer issues, and commentary. Further information on this topic is available in the [Smart Meters Act 2018](#) (August 2018) paper, and the insight on [The smart meter roll-out: Will the 2020 deadline be met?](#) (August 2018)
- [Fuel Poverty](#) (November 2020) and [Help with Energy Bills](#) (March 2019): There are a number of policies designed to either reduce heating demand through energy efficiency or help with the costs of heating bills through support payments and discounts. These Library briefing papers cover, respectively, how fuel poverty (a devolved policy area) is addressed across the UK, and the support available for consumers who want to reduce their energy bills. BEIS consulted on a [new Fuel Poverty Strategy](#) for England in 2019, and a new strategy is expected in 2020.
- [Control for low carbon levies](#) (December 2017): several social and environmental policies are funded through levies on energy companies, rather than directly through general taxation. Energy companies recover the cost of these levy-funded schemes from consumers through bills. In the 2017 Autumn Budget, HM Treasury introduced a new Control for Low Carbon Levies to replace the Levy Control Framework (LCF) which had previously capped the cost of these levy-funded schemes.

4.2 Small scale energy

- [Support for small scale renewables](#) (January 2020): From 2011 to 2019, a support scheme known as feed-in tariffs (FITs) was

available to consumers who installed small scale renewable power generating technologies. BEIS under the May Government closed the FIT scheme in March 2019, and announced a new Smart Export Guarantee, which began on 1 January 2020. This paper explains the policy change, details of the new scheme, and industry comment. For further information on consumer issues with solar panels, see the Library paper on [Q&A Solar panels](#).

- [Renewable Heat Incentive](#) (April 2017): Also from 2011, support known as the Renewable Heat Incentive (RHI) has been available to non-domestic customers (and from 2014 domestic customers) to install renewable heat generating technologies. The RHI is ongoing, and BEIS have also allocated funds to support other renewable heat innovation such as [hydrogen](#) and [heat networks](#). The Government has said they are aiming to publish a [Heat Policy Roadmap in 2020](#) with more policy on decarbonising heat.

4.3 Large scale energy

- [Support for low carbon power](#) (April 2020): This paper sets out details of the Government's primary mechanism for supporting new low carbon power infrastructure, known as the contract for difference (CfD) scheme. CfDs work by guaranteeing a set price for electricity – known as a strike price – that generators receive per unit of power output. As the wholesale price of electricity fluctuates, the generator is either paid a subsidy, or pays back, so that they always receive the value of the strike price. The cost, or benefit, is passed on to consumer bills. The technologies that have been able to compete for CfDs have been subject to policy changes. The Government has announced a consultation on changes to the CfD scheme, which would mean a wider mix of technologies, including onshore wind, will be able to compete for contracts. The Library also has papers on some specific low carbon technologies, as set out below.
- [UK Hydrogen Economy](#) (December 2020): This debate pack sets out background information on hydrogen, including production, possible end uses, and Government support.
- [Tidal Lagoons](#) (June 2018): A developer had requested a bi-lateral CfD but in 2018 it was refused by the May Government due to cost concerns;
- [Geothermal in the UK](#) (June 2018): Like other technologies such as wave and tidal, geothermal power is able to compete for CfDs in allocation rounds, but to date, has not been able to compete with offshore wind on price;
- [Planning for onshore wind](#) (July 2016): In addition to being previously excluded from CfD auctions, there is also a specific planning regime for onshore wind. The Department responsible for this change is now the Ministry of Housing, Communities and Local Government (MHCLG).
- [New Nuclear Power](#) (July 2020): In addition to renewables, successive Governments have also supported new nuclear power. The May Government gave approval for the only nuclear plant currently under construction, Hinkley Point C, and also support for

development of advanced nuclear technologies. This paper covers the history of policy support for nuclear, existing and planned plants, information on research and development including small modular reactors, and policy on waste disposal. The Library insight on [Mind the gap: Challenges for future UK energy policy](#) (January 2019) discusses the issues for energy policy that have been caused by the cancellation of nuclear projects.

- [Carbon Capture Usage and Storage – CCUS](#) (March 2020): CCUS is a set of processes that capture carbon dioxide from waste gases and either store it or reuse it in industrial processes. CCUS is widely expected to be key to mitigating climate change. Despite being a viable technology, no commercial plants exist in the UK. This paper sets out background to the technology, and details how successive Governments have supported CCS, though there have previously been some policy delays.
- [Electricity grids](#) (January 2019): Electricity grids are relevant to several BEIS policies, such as smart meters, and increasing the share of renewables. This Library briefing paper covers how the electricity grid is operated, how electricity is traded, how the grid is balanced, and some of the challenges for the grid in future.
- [Shale gas and fracking](#) (March 2020): fracking is an unconventional method of extracting gas and oil from rock. In 2019, the Government announced it would take a presumption against issuing any further consents for fracking. Before this the Government had encouraged the industry, which was at an early exploration phase.
- [UK oil and gas industry](#) debate pack (October 2018): The UK was previously a net exporter of oil and gas due to reserves in the North Sea, but as the industry has declined, the UK is now a net importer. Oil and gas remain important for the UK's power, heat, and transport sectors and as such are important for energy security. This debate pack covers background information on the UK's oil and gas industry, including the state of the market, employment, policy, and challenges for the future.
- [The future of coal in the UK](#) (December 2020): debate pack with background information on the industry, including current use, sector specific demands, and planning requirements.

4.4 Transport

- [Electric Vehicles and Infrastructure](#) (January 2020): electric vehicles (EVs) are a policy area for both BEIS and the Department for Transport. This paper explains how successive governments have planned for infrastructure and provided vehicle grants and incentives to encourage and accommodate EVs. It also sets out how the electricity grid is preparing to accommodate any increased demand from EV charging and looks at comparative emissions from EVs and conventional vehicles.
- [Future of the British bioethanol industry](#) (January 2019): bioethanol is a fuel produced from plant sources. It can provide an alternative to fossil fuels, e.g. as a transport fuel. The Government supports renewable transport fuels through the Renewable

Transport Fuel Obligation, which requires suppliers to secure a proportion of fuel from renewable sources. Some stakeholders have campaigned to also change petrol fuel standards, to increase the current 5% blend of bioethanol in petrol (known as E5) to 10% (E10).

- Further publications on transport are available from the Commons Library website section on [Transport](#).

4.5 Climate change

- [Climate change: an overview](#): collects together all relevant Library Briefings and other resources on climate change.
- [Climate change explainers](#) (June 2020): a series of Insights providing analysis and explanation on a range of topics related to climate change, including the basic science, the role of MPs in driving policy change, UK and global emission trends, the rise of climate activism and possible solutions within nature and technology. The collection includes an insight on [Mitigating climate change: electricity and beyond](#), which includes discussion of decarbonising the energy sector.

4.6 Brexit

- [Brexit: energy and climate change](#) (June 2020): the UK's departure from the EU has the potential to impact some UK energy and climate change policy. This briefing covers potential impacts on civil nuclear (the Library paper on Euratom also covers Brexit's impact on the civil nuclear industry), the EU internal energy market, energy trading on the island of Ireland, and climate change policy.
- Nuclear: More information on the impact of leaving the EU on the nuclear industry is available in the Library briefing papers on [Euratom](#) (January 2020) and the [Nuclear Safeguards Act 2018](#) (August 2018).

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