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BRIEFING PAPER

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Brexit: Energy and Climate Change

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Summary

The UK left the European Union (EU) on 31 January 2020. The UK is currently in the transition period as set out in the Withdrawal Agreement, which entered into force with the UK's departure. Until the transition period ends (expected to be at the end of 2020), the UK will continue to have the same relationship with regards to rules, including on energy and climate change, as when the UK was a Member State of the EU.

This paper sets out the existing relationship between the UK and EU in relation to energy and climate change and the position of both parties regarding these areas in the negotiations for the future relationship.

Energy

Member States of the EU are ultimately responsible for the energy supply to their citizens, and for deciding on the most appropriate energy mix. However, the UK and EU energy sectors remain integrated through trade, legislation, and interconnection of energy supply, as well as sharing joint research and development aims.

Civil nuclear - Euratom

The European Atomic Energy Community (Euratom) provides the basis for the regulation of civilian nuclear activity in its members. Euratom's roles include implementing a system of safeguards to monitor the use of civil nuclear materials, controlling the supply of nuclear materials, and funding research.

The UK left Euratom as part of its departure from the EU, though the arrangements between Euratom and the UK will continue through the transition period. Both the UK Government and EU negotiating directives for the future relationship refer to an intention for "cooperation" on civil nuclear.

The UK Government has already legislated to replicate Euratom's nuclear safeguards regime and negotiated agreements for nuclear trade with certain countries. More information is available in the Library paper on Euratom.

Energy trading

The UK has five electricity interconnectors with continental Europe and the island of Ireland and more are either under construction or planned. As part of the transition period, the UK remains a member of the EU internal energy market (IEM) which allows harmonised, tariff-free trading of gas and electricity across Europe through interconnectors. This harmonised market makes trading more efficient and can reduce costs to consumers.

The future of the UK relationship with the IEM is subject to the negotiations. Both parties have published draft texts detailing provisions on cooperation on trade in electricity and gas. While there are areas of overlap, there are also differences between the positions including on the details of energy trading, membership of bodies, and governance.

Implications for the island of Ireland

The island of Ireland operates a Single Electricity Market (SEM) which allows free trade of power across the island. A new Integrated Single Electricity Market designed closely around the rules of the IEM, launched in 2018.

Provisions to allow the continued functioning of the SEM were set out in the Protocol on Ireland/Northern Ireland in the Withdrawal Agreement. The UK's future relationship with

the IEM may have an impact on the operation of the SEM as currently the only connections between the island of Ireland and mainland Europe are through interconnectors via Great Britain. The Withdrawal Agreement did not cover trading between the island of Ireland and GB; stakeholders have called for the future relationship negotiations to consider arrangements to facilitate this trading.

Climate change

The UK Government is committed to domestic and international efforts to tackle climate change, neither of which have been impacted by leaving the EU. However, the level of the UK's involvement, future cooperation and alignment with EU climate change efforts remains subject to ongoing negotiation. As an example, on carbon pricing, the UK Government and devolved Administrations have designed a new UK emissions trading scheme for 2021 onwards, which may or may not be linked to the EU emissions trading scheme. The inclusion of enforceable climate change obligations, including those at an international level such as the Paris Agreement, within the UK-EU trade agreement also remains subject to ongoing negotiations.

1. Introduction

The UK left the European Union (EU) on 31 January 2020. The UK is currently in the transition period as set out in the Withdrawal Agreement which entered into force with the UK's departure. Until the transition period ends (currently expected to be at the end of 2020) the UK will continue to have the same relationship with regards to rules, including on energy and climate change, as when the UK was a Member State of the EU.

The UK's energy and climate change sectors are largely governed by domestic policy, but aspects are also integrated with the EU, meaning the future relationship could affect several energy and climate change policies. This remains subject to the outcome of the ongoing negotiations.

On energy, although Member States remain ultimately responsible for security of energy supply to citizens, and for deciding their energy mix, the UK and EU energy sectors remain integrated through trade, legislation and interconnection of energy supply. Consequently, the future relationship between the UK and EU has the potential to affect the UK's civil nuclear industry, including nuclear power and research, and the trade of electricity and gas through interconnectors. Additional areas that may be affected include the island of Ireland's energy market, energy efficiency regulations, and general energy infrastructure through wider changes to trade and the movement of people.

On climate change, the UK has standalone domestic legislation in the form of the *Climate Change Act 2008* including a net zero by 2050 target. The UK is also part of an international effort to combat climate change, which, until the end of the transition period, is intertwined to some extent with the EU, including contributing to the EU's international commitments and direct participation in the EU emissions trading scheme. The UK's future alignment with EU climate change mechanisms is subject to negotiations, but there will be some domestic changes including a new UK emissions trading scheme which is due to be put in place by 2021.

The Withdrawal Agreement contains technical information relating to the civil nuclear industry. The Ireland/Northern Ireland protocol within the Withdrawal Agreement will come into force at the end of the transition period and provide for the continued operation of the Irish Single Electricity Market including Northern Ireland's continued participation in the EU ETS. The Political Declaration includes references to future cooperation on a number of areas, including energy trading, nuclear cooperation, and tackling climate change in international fora and under international agreements.

In relation to the future relationship negotiations, the UK Government has not included energy or climate change in its proposed comprehensive free trade agreement. Instead it has proposed a separate

draft energy agreement[1] which includes provisions on trading in gas and electricity, as well as proposals on climate change co-operation, climate change laws and policies and carbon pricing. The UK has also published a separate draft civil nuclear agreement.[2]

In contrast, the EU has included energy, climate change, and civil nuclear within its draft treaty.[3] The draft treaty includes measures to facilitate nuclear cooperation, promote energy efficiency and renewable energy, maintain competitive markets and use gas and electricity interconnectors "efficiently". The EU includes the fight against climate change as an "essential element" of the partnership as well as within its proposed level playing field provisions.

This paper focuses on the EU and UK Government positions. The Northern Ireland Executive,[4] Scottish Government[5] and Welsh Government[6] have all made statements setting out their position on the future relationship negotiations. The research services in Northern Ireland, Scotland, and Wales, have also published briefings on the negotiations and the specific implications for each of the devolved nations.

1 UK Negotiating Team, Draft working text for an agreement on energy, 19 May 2020
2 UK negotiating team, Draft working text for an agreement […] on Cooperation in the Peaceful Uses of Nuclear Energy, 19 May 2020
3 European Commission, Draft text of the Agreement on the New Partnership with the United Kingdom, 18 March 2020
4 The Executive Office, Statement from the First Minister and deputy First Minister on the publication of the UK negotiating mandate, 27 February 2020
5 Scottish Government, EU-UK future relationship negotiations: statement by the Cabinet Secretary for Constitution, Europe and External Affairs, 3 June 2020
6 Welsh Government, Written Statement: Welsh Government's analysis of the UK Government's negotiating mandate for the Future Relationship with the EU, 28 February 2020

2. Civil Nuclear - Euratom

The European Atomic Energy Community, better known as Euratom, was established in the 1950s as part of the creation of the European Community. The UK became a member of Euratom on 1 January 1973[7] and left on 31 January 2020 as it entered the transition period in line with the Withdrawal Agreement.

Euratom provides the basis for the regulation of civil nuclear activity (meaning non-military uses of nuclear such as power production and medicine). Euratom's role includes implementing a system of safeguards to monitor the use of civil nuclear materials, controlling the supply of fissile materials within EU member states, and funding leading international research such as the Culham Centre of Fusion Energy in Oxfordshire.

For more information, see the Library's briefing paper on Euratom.

2.1 Background on Civil Nuclear

The UK's future relationship with Euratom could have implications for the UK's current nuclear operations, including fuel supply, waste management, cooperation with other nuclear states, and research. The UK Government has said it wants a "close" and "effective" future relationship with Euratom.[8]

Nuclear Safeguards

Nuclear Safeguards are measures to verify that countries comply with their international obligations not to use civil nuclear materials for nuclear weapons.[9]

The *Nuclear Safeguards Act 2018* provided for a new domestic safeguard regime to replace the Euratom regime. Before the UK left Euratom, funding was allocated to the UK's existing body, the Office of Nuclear Regulation, to implement the new regime.[10] As such, there was not a disruptive impact on nuclear safeguards as part of the UK's exit from Euratom.

The Library Briefing on the Nuclear Safeguards Act 2018 provides further detail.

Nuclear Cooperation Agreements for trade

Nuclear Cooperation Agreements (NCAs) facilitate trade, for example, in nuclear materials including fuel. An NCA is not a legal requirement for trade in many countries (where export licences can be used) but is a requirement in Australia, Canada, Japan and the US. The UK already had an agreement with Japan, and agreed new NCAs with the US in

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7 *Treaty of Accession of Denmark, Ireland and the United Kingdom*, 1972

8 HM Government, The Future Relationship between the United Kingdom and the European Union, 12 July 2018, Cm 9593, para 144

9 Office for Nuclear Regulation, What are nuclear safeguards? [accessed 16 June 2020]

10 Written Statement [Energy Policy], HCWS445, 2 February 2018 and Written Statement [Energy Policy], HCWS617, 16 April 2018

May 2018, with Australia in August 2018;[11] and with Canada in November 2018.[12]

Radioisotopes

The Euratom treaty not only manages the movement of nuclear material for power production, but also for medical uses. Radioactive isotopes[13] are used in medicine for the diagnosis and treatment of various diseases, including cancers, cardiovascular and brain disorders.[14] In the UK, around 700,000 nuclear medicine procedures using radioisotopes are carried out each year.[15]

Medical isotopes are imported into the UK; mainly sourced from a few research reactors.[16] Many of these reactors are in EU countries such as the Netherlands, Poland, Belgium, France, Germany and the Czechia.[17] Although radioisotopes can be sourced from beyond the EU, the materials often have short half-lives meaning they can decay rapidly and cannot be stored. This creates the need for constant supply which has failed in the past, creating global shortages.[18]

Prior to the UK's departure from Euratom, some health specialists[19] and MPs[20] expressed concern that any changes to import arrangements as a result of leaving Euratom could impact on the delivery of health treatments.

In a letter to Prime Minister Johnson on 1 August 2019, three groups who procure and use radioisotopes (the Royal College of Radiologists, the British Nuclear Medicine Society, and the UK Radiopharmacy Group) said they were "encouraged" by the work being undertaken by the Government to secure supplies of radioisotopes after Brexit (at the time various Brexit scenarios were possible). However, they continued that they "remain[ed] apprehensive" about supplier readiness and the impact of supply changes on patients. They asked the Prime Minister for clarity on issues including supplies in relation to a no deal Brexit which was a possibility at the time (see Section 6) but also on what action would be taken to address the "increased costs caused by Brexit".[21]

In response to a parliamentary question concerned with the supply of radioisotopes if the UK ends the transition period on 31 December

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11 HCWS983, Energy Policy, 10 October 2018
12 Gov.uk, [CS Canada No.1/2018] UK/Canada: Agreement for Cooperation in the Peaceful Uses of Nuclear Energy, 12 November 2018
13 POSTnote 558, *Supply of medical Radioisotopes*, July 2017
14 European Commission, *Supply of medical radioisotopes*, [accessed 16 June 2020]
15 *Supply of Medical Radioisotopes*, POSTnote 558, July 2017
16 Some radioisotopes can also be produced in particle accelerators.
17 World Nuclear News, *Radioisotopes in Medicine*, May 2017
18 British Nuclear Medicine Society and Science & Technology Facilities Council, *Future Supply of Medical Radioisotopes for the UK*, December 2014
19 For example, Dr Nicola Strickland, *RCR statement on the potential impact of leaving the Euratom treaty*, Royal College of Radiologists, 10 July 2017
20 Jonathon Prynn and Joe Murphy, *Tory rebellion goes nuclear: nine MPs oppose plan to quit body that would 'threaten supply of key cancer treatment material*, *Evening Standard*, 10 July 2017
21 Royal College of Radiologists, Prime Minister urged to clarify queries on radioisotope transport and costs, 1 August 2019

without a trade agreement, the Government said that in addition to its objective of negotiating an agreement:

> The Department will continue to work closely with the pharmaceutical industry, the National Health Service and others in the supply chain to help ensure patients can access the medicines they need, and precautions are in place to reduce the likelihood of future shortages.[22]

For more information on radioisotopes, see the Library briefing paper on Brexit and medicines regulation.

Research

The UK collaborates with the EU on a number of nuclear research projects.

Horizon 2020

Euratom's research and training (R&T) programme is aligned with Horizon 2020. Horizon 2020 is the biggest EU Research and Innovation programme to date with nearly €80 billion of funding available over 7 years (2014 to 2020) in addition to private investment – this is for many sectors, not just nuclear.[23]

Before Brexit, in August 2016 the Government announced it would underwrite funding for approved Horizon 2020 projects applied for before the UK left the EU, this included Euratom R&T funds.[24] In July 2018, the Treasury extended the Government's guarantee to underwrite the UK's allocation for funding until the end of 2020.[25]

Fusion: JET and ITER

The UK is also involved in EU nuclear fusion research as part of the JET (Joint European Torus) and ITER (International Thermonuclear Experimental Reactor) projects.

JET is a magnetic fusion device, designed to prove the feasibility of fusion as an energy source. The project is based at Culham in Oxfordshire. Euratom provides 87.5% of the funding for the project and the UK Government provides the rest.[26]

JET is helping to inform a larger fusion reactor – ITER - which is being built in France. The UK's future involvement in JET and ITER remain subject to the negotiation. Government guidance states that from the end of the transition period in January 2021, JET operations will continue, but the UK will not be a member of the European contribution to ITER.[27]

A contract extension announced in March 2019 means the EU and UK funding for JET will continue until the end of 2020. The UK Government press release also stated that the contract "leaves open the option of a

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22 PQ HL4534, 20 May 2020
23 European Commission, *What is Horizon 2020?* [accessed 16 June 2020]
24 Gov.uk, Chancellor Phillip Hammond guarantees EU funding beyond date UK leaves EU, 13 August 2016
25 HCWS926, HM Government's Guarantee, 24 July 2018
26 Department for Business, Energy and Industrial Strategy, Euratom Exit Factsheet, Research and Development, June 2018
27 Gov.uk, Nuclear research from 1 January 2021, 13 August 2019

further extension to JET's operations until 2024, which would enable it to support ITER in the run-up to its launch in 2025".[28]

ITER has members beyond Europe (China, India, Korea, Russia, and the United States). The ITER council has acknowledged "for decades, the UK has been a leader in the global fusion research community" in a statement on the possibility of future UK involvement in ITER.[29] UK Government guidance states the UK will leave the European contribution to ITER at the end of the transition period, but the guidance doesn't mention whether the UK will seek to rejoin as a non-European member. In the short term, the ITER council and UK Government have confirmed that current contracts with UK nationals and operators will be considered valid until their contractually agreed end date.[30]

2.2 Negotiating positions for the Future Relationship

Withdrawal agreement and Political declaration

The Withdrawal Agreement includes civil nuclear provisions relating to nuclear safeguards, the ownership of materials and equipment, and nuclear waste.[31] Detail on these provisions is set out in Section 4.12 in the Library briefing paper on The UK's EU Withdrawal Agreement (April 2019).

The Political Declaration on the Framework for Future EU-UK relations includes references to nuclear safety, trade, research, and the supply of radioisotopes. Detail on these provisions is set out in Section 4.13 in the Library briefing paper on The Political Declaration on the Framework for Future EU-UK Relations (December 2018).

EU and UK Future Relationship Negotiating Positions

On 18 March 2020, the EU published a draft treaty[32] which included provisions on civil nuclear. On 19 May 2020, the UK Government published a series of documents setting out its approach to the negotiations on the future relationship with the EU, including a draft civil nuclear agreement.[33]

There are broad areas of overlap between the two draft documents:

- **Safeguards:** Within the current published draft texts, there is no substantial difference between the positions on the safeguards that will apply to the UK and EU as part of the future relationship.

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28 Gov.uk, *Future of JET secured with new European contract*, 29 March 2019
29 ITER, Brexit – What should ITER expect?, 3 February 2020
30 Gov.uk, Nuclear research from 1 January 2021, 13 August 2019
31 The provisions on civil nuclear were unchanged between the May and Johnson Withdrawal Agreements.
32 European Commission, Draft text of the Agreement on the New Partnership with the United Kingdom, 18 March 2020
33 UK negotiating team, Draft working text for an agreement […] on Cooperation in the Peaceful Uses of Nuclear Energy, 19 May 2020

- **Radioisotopes:** Both texts include provisions on cooperation on radioisotopes, in particular in relation to exchanging information on the supply of radioisotopes.
- **Research:** Both texts include provisions on cooperation on nuclear research and development. The EU draft treaty states that the UK may participate in Euratom programmes such as ITER, with specific terms and conditions (such as financial contributions) to be determined in accordance with the Treaty's provisions for Union programmes.
- **Other provisions:** There is also overlap on technical provisions such as enrichment and intellectual property.

The fourth round of negotiations were completed in June 2020. Both Michel Barnier (representing the EU)[34] and David Frost (representing the UK)[35] said overall progress had been limited.

Michel Barnier referred to civil nuclear cooperation as an area where he considered the UK was seeking to "distance themselves" from the "common basis" of the Political Declaration. Specifically, Barnier referred to distance from the objective of "maintain[ing] existing high standards of nuclear safety" (paragraph 66 of the Political Declaration).[36]

David Frost did not mention nuclear or energy in his statement after the fourth round of negotiations.[37] However in a letter to Barnier in May 2020, Frost said that the UK's legal texts "draw on precedent where relevant precedents exist" and included the example of nuclear, " our draft civil nuclear agreement is very close to similar cooperation agreements that Euratom (and indeed the UK) has concluded with other third countries".[38]

Commentary

Most commentary on the UK's relationship with Euratom was published before the UK's departure from Euratom. In December 2017, the House of Commons Business, Energy and Industrial Strategy (BEIS) Committee published its report on 'Leaving the EU: implications for the civil nuclear sector'. The report concluded:

> The UK's departure from Euratom is an apparently necessary but unwanted consequence of exiting the European Union. The Government's task is to minimise the potential adverse impacts of this departure.[39]

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34 European Commission, Statement by Michel Barnier following Round 4 of negotiations for a new partnership between the European Union and the United Kingdom, 5 June 2020

35 Gov.uk, No 10 media blog, David Frost's statement following the conclusion of round 4 of negotiations with the EU, 5 June 2020

36 European Commission, Statement by Michel Barnier following Round 4 of negotiations for a new partnership between the European Union and the United Kingdom, 5 June 2020

37 Gov.uk, No 10 media blog, David Frost's statement following the conclusion of round 4 of negotiations with the EU, 5 June 2020

38 Letter from David Frost to Michel Barnier regarding UK draft legal texts, 19 May 2020

39 House of Commons BEIS Committee, Leaving the EU: Implications for the civil nuclear sector, Second Report of Session 2017-19, 12 December 2017, para. 4

Overall the Committee recommended an association with Euratom that replicates the existing functions.[40] The Government responded that it wanted a "close and effective association with Euratom" but that the nature of the relationship would be different, and subject to the negotiations on the future relationship.[41]

The Library briefing paper on Euratom includes more information on the preparations the UK made for its departure from Euratom (in January 2020) along with details and commentary on the Government's position on the future relationship with Euratom.

40 House of Commons BEIS Committee, Leaving the EU: Implications for the civil nuclear sector, Second Report of Session 2017-19, 12 December 2017, para. 43

41 House of Commons BEIS Committee, Leaving the EU: Implications for the civil nuclear sector: Government response to the Committee's Second Report, Sixth Special Report of Session 2017-19, 6 March 2018, para 30

3. Energy

Numerous aspects of the UK energy sector could be affected by the future relationship between the UK and EU. One of the key aspects, is the trading of energy across interconnectors operating in the EU's internal energy market (IEM). Other aspects include energy efficiency, and cooperation on renewable development.

This section sets out background on energy issues and provides the positions of each party to these areas in the future relationship negotiations.

Some of these areas, specifically the UK's relationship with the IEM, have implications for energy trading on the island of Ireland. This is considered in Section 4.

3.1 The Internal Energy Market (IEM)

As part of the transition period, the UK remains part of the EU's internal energy market (IEM). The IEM allows harmonised, tariff-free trading of gas and electricity across Europe (through interconnectors), leading to lower prices and greater security of supply.[42]

The UK Government has been "a leading advocate for the development of the IEM and has heavily influenced the EU-wide rules, which draw on UK practice."[43] Energy trading, and the degree of UK participation in the IEM, is being considered as part of the negotiations on the future relationship.

Development of the IEM

During the 1990s, the EU and its Member States decided to liberalise energy markets, opening them to competition gradually. The EU-led changes, which have been developed through a series of legislative packages affecting the gas and electricity sectors, initially followed the more advanced liberalised status of the UK market:

- The first liberalisation Directives were adopted in 1996 (electricity) and 1998 (gas) and transposed into Member States' legal systems by 1998 (electricity) and 2000 (gas).
- The second liberalisation Directives were adopted in 2003 with transposition of the Directives into national law by Member States in 2004. In the UK, these Directives were transposed into law largely by the *Energy Act 2004*.
- Further measures have been introduced since to improve the functioning of the market. This includes the what was known as the third energy package,[44] transposed into UK law through the *Electricity and Gas (Internal Markets) Regulations 2011* for Great Britain and separate regulations for Northern Ireland.

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42 DexEU The United Kingdom's exit from and new partnership with the European Union White Paper, C9417, 2 February 2017, p. 43

43 House of Commons Exiting the EU Committee, Electricity and Renewables Sector Report, 21 December 2017

44 European Commission, Third energy package, updated 16 March 2020

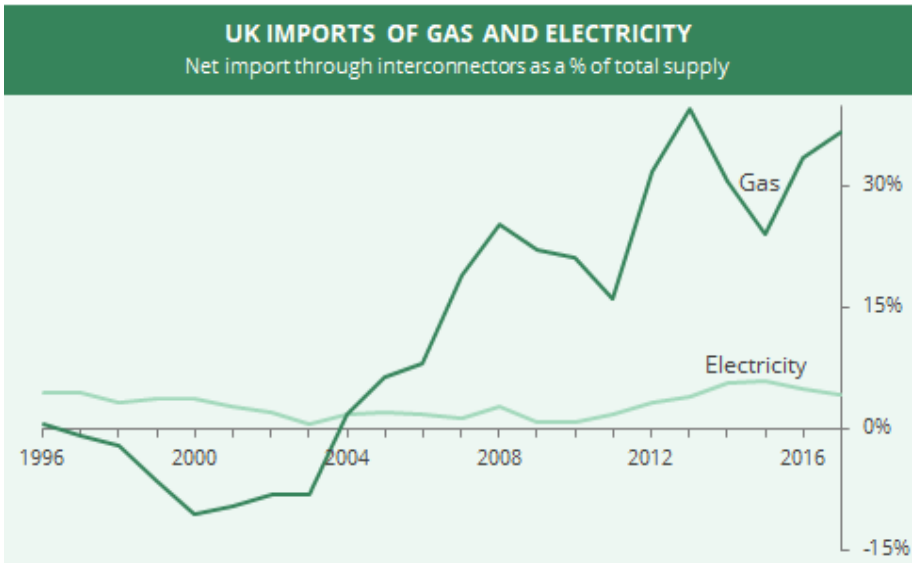
- A further update to EU energy policy was completed in 2019 with the 'Clean energy for all Europeans' package. In addition to provisions on energy performance in buildings, renewable energy, and energy efficiency, the package also contained elements relating to electricity market design with the aim of making the market "more flexible, more market-orientated, and better placed to integrate a greater share of renewables".[45]

Whether and to what extent these and future EU regulations will apply to the UK as part of the future relationship are subject to the outcome of the negotiations.

UK energy trading

Interconnectors can operate in both directions, meaning they can import and export electricity and gas. The UK exports some gas and electricity through interconnectors at various points during the year, but overall the UK is a net importer of both gas and electricity. The extent of these imports has varied over time as the UK used to be a net exporter of gas, but has been a net importer for more than a decade. Trends over the last two decades are shown in the graph below.

In 2018, the UK imported 5.4% of its electricity through interconnectors with EU or EEA countries (Norway, which is part of the IEM as an EEA member), and 40.7% of its gas. The gas comes from both EU or EEA interconnectors (85% of total gas imports) and LNG imports (4% of LNG imports from Norway and the rest from non-EU/EEA countries).[46,47]



Source: DBEIS, Digest of UK Energy Statistics 2019. Tables 5.5, 4.2 and G.5

45 European Commission, Clean energy for all Europeans package, updated 12 March 2020

46 Net imports as a percentage of total supply

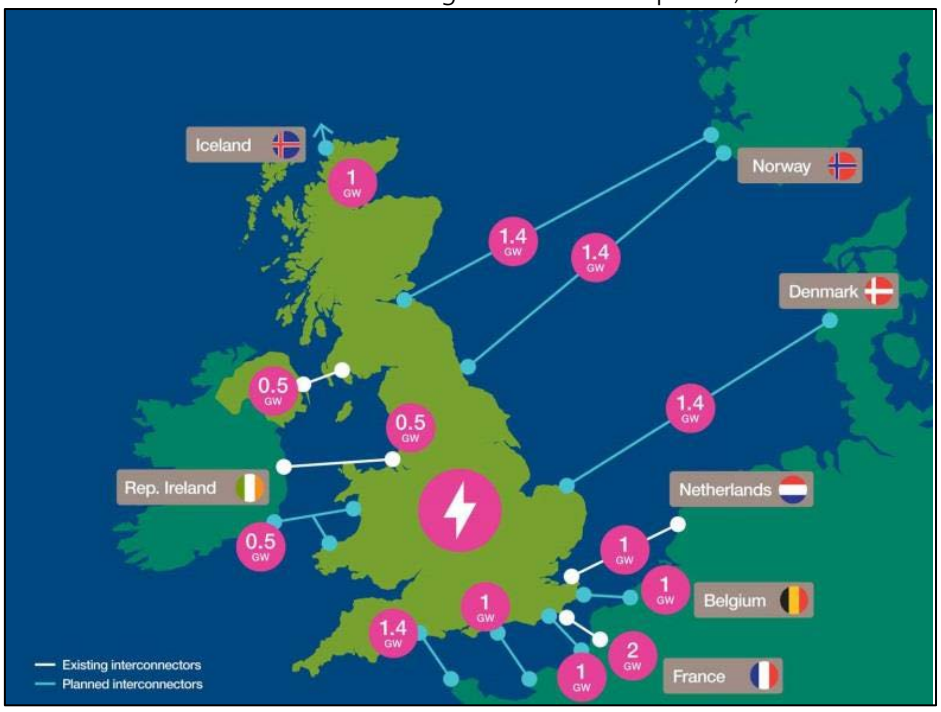
47 Department for Business, Energy and Industrial Strategy, Digest of UK Energy Statistics 2019. Tables 5.5 and G.5

Electricity interconnectors and the IEM

Great Britain has five completed electricity interconnectors with mainland Europe and the island of Ireland providing around 5GW of electricity interconnector capacity:

- 2GW to France (IFA);
- 1GW to the Netherlands (BritNed);
- 500MW to Northern Ireland (Moyle);
- 500MW to the Republic of Ireland (East West) and
- 1GW to Belgium (NEMO).

These are shown in the Figure below (reproduced with permission from National Grid - the 1GW link to Belgium is now completed).



Source: Provided to the Library by National Grid, reproduced with permission.

In 2018, 67% of net electricity imports came from France, 32% from the Netherlands and 1% from the interconnectors with Ireland. The UK's trading with the island of Ireland has fluctuated over time; in 2018 the island was a net importer of electricity from the UK.[48]

Electricity interconnection capacity is due to nearly double by 2022 with numerous projects under construction, and further projects have sought regulatory approval.[49] The May Government's 2017 Clean Growth Strategy set out the Government's support for 9GW more capacity than was currently operational or under construction at the time.[50]

The IEM facilitates harmonised tariff-free trade across these electricity interconnectors (see Box 1). The flow of electricity between

48 Department for Business, Energy and Industrial Strategy, Energy Trends. Table 5.6
49 Ofgem, Electricity interconnectors, [accessed: 15 June 2020]
50 HM Treasury, Autumn Statement 2016, 23 November 2016; and HM Government, Clean Growth Strategy, October 2017

interconnected markets is driven by cost differentials. When the price of electricity is lower in one market, energy will flow from that market to the higher priced market. The effect of this is to make the prices in each converge – i.e. they increase in the exporting market and decrease in the importing market.

As wholesale gas and electricity prices in the UK are generally higher than elsewhere in Europe, interconnection has caused a reduction in wholesale prices, and hence consumer prices, in the UK.[51]

Interconnector cables also provide flexibility that can help to integrate intermittent renewable sources of electricity into power systems. This is because they prevent the need to curtail (i.e. disconnect from the grid) this power when supply is greater than demand by exporting any excess power.[52]

Box 1: The IEM and Market Coupling

As part of the development of the IEM, trade across electricity interconnectors is increasingly integrated via 'market coupling'. Market coupling uses an algorithm to set prices and trading volumes across interconnected markets. Markets are said to be coupled when interconnector capacity and electricity are sold in a single market transaction, whereas in uncoupled markets these are sold separately.[53] Market coupling is a more efficient means of trading, which reduces system costs. Decoupling markets can therefore increase the costs of imports.

Great Britain is currently coupled to north-west Europe and the island of Ireland in the 'day-ahead market' (referring to electricity that is bought and sold a day ahead of delivery). Several EU countries are also coupled on the 'intraday' markets (for electricity that is sold between an hour and 24 hours ahead of delivery)[54] and work is underway for further countries to couple with the EU intraday market.

The UK has set out its position on maintaining and extending its market coupling in its draft energy agreement (see section 3.4).

More information on electricity interconnectors is available from the Parliamentary Office of Science and Technology's note on Overseas Electricity Interconnection (February 2018).

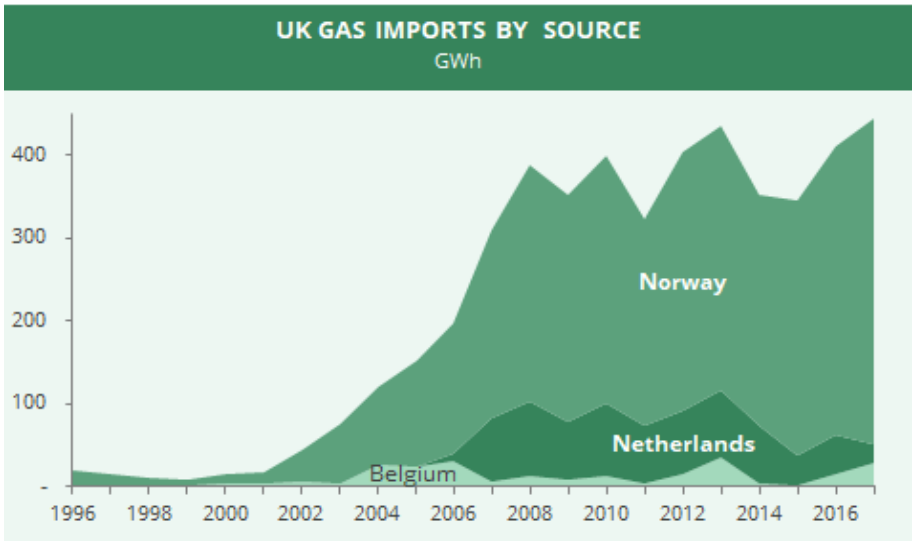
Gas interconnectors

The UK imports natural gas via pipelines from Norway, the Netherlands and Belgium (all IEM members) and by ship in the form of Liquefied Natural Gas (LNG). As most LNG comes from outside the EU (from countries such as Qatar), this section discusses interconnectors (with EU and EEA countries) only.

As domestic gas production from the North Sea has declined, imports have risen. In the years from 2012 the UK has imported 25-40% of its

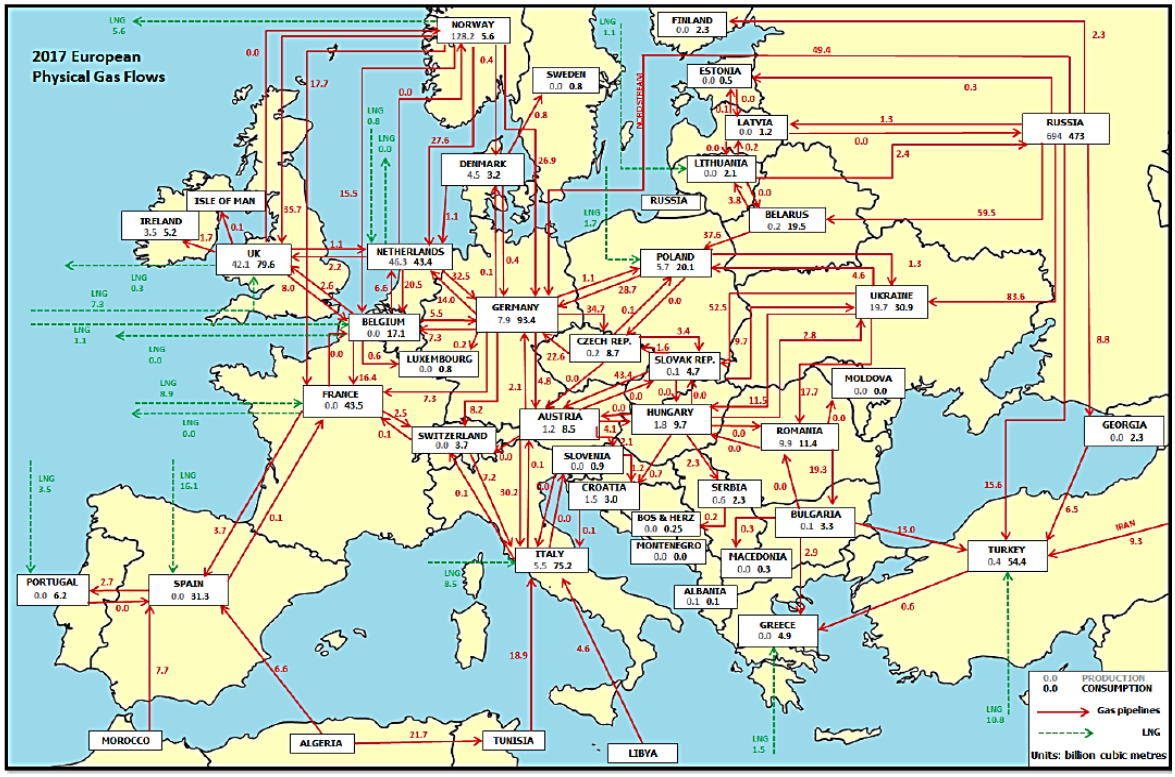
51 Parliamentary Office of Science and Technology, Overseas Electricity Interconnection, February 2018.
52 Library briefing paper, Electricity grids, 8 January 2019
53 Antony Froggatt et al, Staying Connected: Key Elements for UK–EU27 Energy Cooperation After Brexit, *Chatham House*, May 2017
54 Antony Froggatt et al, Staying Connected: Key Elements for UK–EU27 Energy Cooperation After Brexit, *Chatham House*, May 2017

gas supply via interconnectors.[55] Trends in imports from each country are illustrated in the graph below.



Source: DBEIS, Digest of UK Energy Statistics 2019. Table G.5

Not all of this gas originates in those countries, some may have first been imported from other countries, such as Russia, as the figure below shows. There are no market coupling mechanisms for gas, but it is still regulated in accordance with EU Legislation.



Source: Reproduced from Department for Business, Energy and Industrial Strategy, Digest of UK Energy Statistics, 2018

IEM regulation and governance

55 Department for Business, Energy and Industrial Strategy, Digest of UK Energy Statistics 2019. Table G.5

The rules of the IEM (known as European Network Codes - ENCs) are determined by European Network Transmission Systems Operators (ENTSOs), European Agency for the Cooperation of Energy Regulators (ACER) and the European Commission (see Box 2).

ENCs are ultimately upheld by the Court of the European Union (ECJ). Ending the jurisdiction of the ECJ in the UK has been a key part of the UK Government's approach to Brexit.[56] The UK Government has proposed alternative governance and dispute arbitration mechanisms for the future relationship (see section 3.4).

Integration with the IEM could require the UK's compliance with current and future EU energy market rules, as well as some EU environmental legislation.[57]

Box 2: IEM governing bodies

A number of European bodies coordinate national energy institutions at the European level to help the IEM function.

ACER

Regulation (EC) No 713/2009 established the Agency for Cooperation of Energy Regulators (ACER), which has been fully operational since March 2011. ACER is largely responsible for promoting cooperation between national regulatory authorities at regional and European level and for monitoring development of the network and the internal electricity and gas markets.

Ofgem (the GB energy regulator)[58] and the Utility Regulator (the Northern Ireland energy regulator) are currently members of ACER.

ENTSO

Two EU Regulations created structures of cooperation for European Network Transmission Systems Operators (ENTSOs): Regulation EC/714/2009 for electricity; and Regulation EC/715/2009 for gas. The ENTSOs, together with ACER, form detailed network access rules and technical codes, and ensure coordination of grid operation through the exchange of operational information and the development of common safety and emergency standards and procedures.

UK Transmission System Operators, such as National Grid, are currently members of ENTSO-E and ENTSO-G.[59]

3.2 Considerations for the Future Relationship

The UK's future participation in the IEM remains subject to the outcome of the future relationship negotiations (see section 3.4). It is important to note that whatever the outcome, interconnector trading is expected to continue: a number of countries outside of the EU currently trade energy through interconnectors with the EU. The EU does not currently apply tariffs to these imports.[60]

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56 Gov.uk, The government's negotiating objectives for exiting the EU: PM speech, 17 January 2017

57 Lords EU Committee, Brexit: energy security, 10th Report of Session 2017-19, HL Paper 63, 29 January 2018, para. 70

58 Ofgem, Ofgem and Europe, [accessed: 16 June 2020]

59 A full listing of Member Transmission System Operators is available on the ENTSO- E website and the ENTSO-G website.

60 Gustav Frederiksson, Alexander Roth, Simone Tagliapietra, Georg Zachmann, The Impact of Brexit on the EU Energy System, 23 November 2017, p. 25

However there may be other costs to a different relationship with the IEM. These costs have the potential to impact EU countries, who either export or import energy from the UK, as well as the UK itself.

Cost of Energy

Leaving the IEM may cause an increase in the cost of energy imports. One estimate given by National Grid to the House of Commons Business, Energy and Industrial Strategy (BEIS) Committee, in 2017, was that "UK consumers could face £500 million a year of costs by the early 2020s as a result of being outside the IEM". This estimate was described by Paul Hallas, Director of Regulation and Strategy at Centrica, as "at the bleak end of the plausible envelope of possible outcomes.[61]

Any extra cost is largely due to the likelihood the UK would need to be de-coupled from the EU market, making trading less efficient and more expensive (see Box 1).

Energy security

The Department for Business, Energy and Industrial Strategy (BEIS) and the energy regulator Ofgem produce an annual Statutory Security of Supply report. The 2019 report said leaving the EU did not pose an energy security threat:

> The UK's exit from the EU will not alter the fact that our energy system is resilient and secure and drawn from a number of sources. GB has one of the most reliable energy systems in the world and we remain confident in maintaining our secure energy supply.[62]

However, it is possible that in future, in the event of leaving the IEM, the UK's plans for further interconnectors could be more difficult.[63] More interconnectors are of benefit to the UK to increase the flexibility and resilience of grids, especially with increasing supply from intermittent renewable energy sources. For more information, see the Library briefing paper on Electricity grids.

Influence on rules

Depending on the relationship the UK negotiates with the EU in relation to the IEM, the UK's influence on future rules may change (see Box 2).

In May 2017, the BEIS Committee recommended that the Government "seek continued UK influence over the rules of the IEM [and] explore continued full membership of the technical institutions for developing the detailed rules of the Internal Energy Market."[64]

In January 2018, the Lords EU environment and energy sub-committee's report on Energy Security said, "there is strong support across the energy industry for the UK to continue to participate in the Internal Energy Market (IEM) post-Brexit." However, witnesses stated that if

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61 BEIS Committee, Leaving the EU: negotiation priorities for energy and climate change policy, Fourth Report of Session 2016–17, HC 909, 2 May 2017, p. 12
62 BEIS and Ofgem, Statutory Security of Supply Report 2019, 2019
63 Andrew Ward, Our friends electric: interconnection and Brexit, *Financial Times,* 15 January 2018
64 BEIS Committee, Leaving the EU: negotiation priorities for energy and climate change policy, Fourth Report of Session 2016–17, HC 909, 2 May 2017, para. 39

remaining in the IEM required the UK to comply with all EU standards, and potentially losing their representation ability to influence the IEM, then the UK would need to review the pros and cons of remaining in the IEM in that situation.[65]

3.3 Other energy impacts

While trade over interconnectors is a key part of the energy aspects under consideration in the future relationship negotiations, there may also be implications for some other areas of energy policy.

Energy efficiency

Energy efficiency regulations limit the amount of energy that products consume which can reduce costs for consumers and reduce energy-related emissions. Before the Brexit referendum, there were press reports that supported the case to leave the EU, as it would allow the UK to remove EU energy efficiency laws on household items such as vacuum cleaners and lightbulbs.[66]

Existing EU energy efficiency directives have been implemented into UK law and so continue to apply now the UK has left the EU. The UK Government's domestic policy, before Brexit and at present, is to keep costs down for consumers, and also to meet emissions targets (see section 5 below). The Government has said that after the transition period ends, the UK will meet or exceed existing product standards:

> From 1 January 2021, the UK will uphold common high product standards wherever possible and appropriate, or even exceed them where it is in the UK's interest to do so.
>
> All EU ecodesign and energy labelling requirements which enter into force and apply before 31 December 2020 will have effect in the UK. Further legislation is being prepared to ensure that all of these requirements continue to function in the UK from 1 January 2021.[67]

Trade

There has been some concern that Brexit could affect investor confidence, the movement of industry specialists, or the import/export of materials linked to renewable energy technologies.[68]

The House of Lords EU Energy and Environment sub-Committee has cautioned that any possible tariffs on products used in the construction and maintenance of the energy system could affect the energy industry.[69] This possible impact on new energy infrastructure has also

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65 Lords EU Committee, Brexit: energy security, 10th Report of Session 2017-19, HL Paper 63, 29 January 2018

66 20 reasons you should vote to leave the European Union, *The Telegraph*, 22 June 2016

67 BEIS, Meeting climate change requirements from 1 January 2021, 28 April 2020

68 Jonathan Gaventa, The impact of Brexit on Europe's energy and climate transition, E3G, 30 June 2017

69 Lords EU Committee, Brexit: energy security, 10th Report of Session 2017-19, HL Paper 63, 29 January 2018, para. 85

been reported in the media, with concerns raised about projects such as Hinkley Point in relation to general trade and movement of labour.[70]

The impact of these potential issues will depend on any trade arrangements agreed as part of the future relationship negotiations.

The professional services firm EY's 2018 Renewable Energy Country Attractiveness Index, which ranks 40 countries based on the attractiveness of their clean energy markets to investors, saw the UK slip one place from 7th to 8th, with Brexit referred to as being one of the possible causes.[71] However in the most recent Index (May 2020), the UK rose to 6th place with new policies on renewable energy credited for the rise.[72]

3.4 Negotiating positions for the Future Relationship

2018 White Paper and previous Withdrawal Agreement

The May Government's July 2018 White Paper on the Future Relationship between the UK and the EU made no commitment on the IEM and contained options to either leave or remain in the market. The paper said the UK was seeking "broad energy cooperation with the EU" and wanted to "explore the options" on the IEM. This included options of leaving and maintaining trading or retaining access and using a common rulebook for certain technical rules, though not, in the UK's view, for wider environmental and climate change rules.[73]

The Withdrawal Agreement negotiated by the May Government was not ratified and was superseded by the 2019 Withdrawal Agreement (below). The provisions on energy trading were the same in both texts.

Withdrawal Agreement and Political Declaration

While the Withdrawal Agreement did not mention the IEM (other than in the Northern Ireland Protocol – see section 4 below) the Political Declaration setting out the framework for the future relationship between the EU and the UK stated there should be mechanisms to ensure "security of supply" and "efficient trade over interconnectors over different timeframes".[74]

More information on the provisions relating to energy in these documents are available in Section 8.6 of the Library briefing paper on The UK's EU Withdrawal Agreement (April 2019) and 4.13 of the paper

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70 Rob Davies, Energy projects including Hinkley Point threatened by Brexit, experts warn, *The Guardian,* 5 April 2017

71 EY, Renewable Energy Country Attractiveness Index, Issue 52. The UK remained in 8th place in 2019.

72 Jillian Ambrose, Renewable energy investors increasingly look to UK, says report, *The Guardian,* 19 May 2020

73 HM Government, The Future Relationship between the United Kingdom and the European Union, 12 July 2018, Cm 9593, para 137-142

74 The Political Declaration also made specific reference to ENTSO but omitted ACER while the latter is included in the Northern Ireland Protocol of the Withdrawal Agreement relating to the Single Electricity Market (see below) but the former is not.

on The Political Declaration on the Framework for Future EU-UK Relations (December 2018).

EU and UK Future Relationship Negotiating Positions

On 25 February 2020, the EU published negotiating directives for the future relationship,[75] including on electricity and gas. Detailed provisions building on these principles were included in the EU draft treaty published on 18 March 2020[76] (these texts refer to energy with raw materials, this paper focuses on energy).

While the EU negotiating directives state clearly that "the UK will leave the internal market in energy", the EU documents suggest a future partnership covering areas such as investment in renewable and energy efficiency technologies, measures to maintain competitive markets, and the efficient use of interconnectors.

The UK Government published its approach to the negotiations in February 2020.[77] On 19 May 2020, the UK Government published a series of documents setting out its approach to the negotiations on the future relationship with the EU, including a draft energy agreement.[78]

The UK position has some areas of broad overlap with the EU position, such as promoting renewable energy and energy efficiency, maintaining market-based prices, and some provisions relating to the efficient trading on interconnectors.

However there are some areas of difference, including on the detail of IEM integration, cooperation and membership of relevant bodies (ENTSO and ACER), and governance.[79] Some of the key areas in the texts are:

- **Renewable energy and energy efficiency:** Both texts refer to support for renewable and energy efficiency technologies. The UK text has provisions on climate change (see section 5 below) which includes cooperation on trade and investment in renewable energy and energy efficiency goods. The EU text is more detailed, including a requirement to establish targets for renewable energy and energy efficiency in line with those that the UK already has as an EU member, promote, and cooperate on regulation and research on energy efficiency and renewable energy.
- **Efficient use of interconnectors:** While both texts include provisions for gas and electricity balancing and trading, including avoiding barriers to cross-border trading, they differ on detail. Both include provisions on interconnector capacity allocation,

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75 Council of the European Union, Directives for the negotiation of a new partnership with the United Kingdom of Great Britain and Northern Ireland, 25 February 2020

76 European Commission, Draft text of the Agreement on the New Partnership with the United Kingdom, 18 March 2020

77 HM Government, The Future Relationship with the EU – The UK's Approach to Negotiations, February 2020

78 UK Negotiating Team, Draft working text for an agreement on energy, 19 May 2020

79 Detailed information on the provisions in the UK draft energy agreement are available in the Scottish Parliament Information Centre's (SPICe) paper on EU-UK Future Relationship Negotiations – UK Legal Text Special, 2 June 2020

congestion management, no network charges, and participating in compensation mechanisms. The UK text also contains technical provisions for trade in electricity which are not included in the EU text, including the use of balancing platforms and market coupling over different timeframes (see Box 1). The draft agreement includes an Annex of the Regulations that would continue to apply in GB as requirements for the UK's balancing and trading proposals.

- **Participation in bodies:** The UK text states that UK bodies will participate as observers in meetings of ENTSO-G and ACER and members of ENTSO-E. The EU text states the parties will develop working arrangements for cooperation with ENSTO-E, ENTSO-G and ACER though states clearly that this shall not involve membership of these bodies (see Box 2).
- **Offshore energy:** Both texts refer to cooperation in development of offshore energy. The UK text refers to the parties supporting the other's "full participation" in voluntary structures established for such cooperation between the North Sea Countries. This may refer to The North Sea Energy Cooperation which the UK reportedly wished to attend after its departure as part of EU Withdrawal. The EU text refers only to cooperation on such projects through "sharing best practice" and "facilitating the development" of specific projects.
- **Governance:** The UK text includes provisions for a framework for consultation and dispute resolution, including the use of a Panel of Experts, and the establishment of an Energy Cooperation Group to administer the Agreement. The EU text does not include either proposal. Instead for all sectors, the EU proposes a joint EU-UK governing body (the Partnership Council) with specialised sectoral committees. More information on the differing negotiating positions on Governance and other areas is available in the Library briefing paper on The UK-EU future relationship negotiations: summary of positions.
- **Other provisions:** there is also broad overlap between the two texts on some further provisions of energy trading. Both include commitments on the exchange of information, market-based prices, and non-discriminatory access to energy transport infrastructure, and requirements for transparent system operators and independent regulatory authorities. The EU text contains further provisions not covered by the UK text, such as on the exploration and production of energy goods, offshore risk and safety, gas preventative action plans and emergency plans, and electricity risk preparedness.

Statements from the negotiating parties have indicated that there may be differences of opinion regarding energy in the negotiations. In his 15 May remarks following Round 3 of negotiations, EU chief negotiator Michel Barnier included electricity interconnectors in a list of what he regarded as the "many areas [where the UK is] looking to maintain the benefits of being a Member State, without the obligations". Specifically, Barnier said the UK's demands included "to obtain electricity

interconnection mechanisms equivalent to the Single Market – 'existing arrangements' as the UK says."[80]

From the UK side, in a 24 April 2020 Statement in response to the second round of negotiations, the UK Government listed energy as a core area of a Free Trade Agreement where that had been some "promising convergence".[81]

The fourth round of negotiations were completed in June 2020. While neither Michel Barnier (representing the EU)[82] nor David Frost (representing the UK)[83] specifically mentioned energy in their respective statements, both said overall progress had been limited.

Examples of energy agreements between the EU and other non-EU members are set out in Box 3 below.

Commentary

Before the UK's departure from the European Union, stakeholders expressed support for continued participation in the IEM. In January 2018, the Lords EU environment and energy sub-committee's report on Energy Security said "none of our witnesses expressed a desire to leave the IEM" and concluded "there is strong support across the energy industry for the UK to continue to participate in the Internal Energy Market (IEM) post-Brexit." The key benefits cited by witnesses were the efficiency savings made from market coupling and options to exchange information.[84]

In response to the publication of the February 2020 draft EU treaty and May 2020 draft UK energy agreement on the future relationship, EU and UK energy trade bodies released a statement calling for "an efficient future energy EU-UK relationship". This commented on several areas of the texts, including calling or cooperation and collaborating between regulators and system operators through UK participation of bodies such as ACER, ENTSO, and further details on maintaining collaboration on offshore projects in the North Sea. On electricity and gas trading, this stated further details were needed on how to maintain efficient trading:

> Efficient cross-border trading, supported by harmonised trading rules and regulatory cooperation, supports security of supply and low energy bills for all consumers, while helping to balance the penetration of renewable generation. So we welcome that both sides agree on the need and the benefits of efficient and cost-effective trading over interconnectors. Further details are needed on how this can be achieved with clear and transparent rules that do not discriminate. We would suggest that the framework

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80 European Commission, Remarks by Michel Barnier following Round 3 of negotiations for a new partnership between the EU and the UK, 15 May 2020

81 No 10 media blog, Statement on Round Two of UK-EU negotiations, 24 April 2020

82 European Commission, Statement by Michel Barnier following Round 4 of negotiations for a new partnership between the European Union and the United Kingdom, 5 June 2020

83 Gov.uk, No 10 media blog, David Frost's statement following the conclusion of round 4 of negotiations with the EU, 5 June 2020

84 Lords EU Committee, Brexit: energy security, 10th Report of Session 2017-19, HL Paper 63, 29 January 2018

presented in the UK legal text is more likely to achieve such an outcome.[85]

Box 3: Existing energy agreements

The EU states clearly in its negotiating directives Q&A that there are no other countries that have energy relationship models with the EU that are directly comparable with what is being sought by the UK:

> In the area of electricity and gas, there is no precedent for this type of arrangement.

The Parliamentary Office of Science and Technology's note on Overseas Electricity Interconnection set out that some non-Member states participate in the IEM, to varying levels of integration. For example, EEA members participate fully. They must adopt and automatically update a substantial amount of EU energy and environment legislation to do so. The IEM's legal framework falls under the jurisdiction of the European Court of Justice.

The House of Lords EU Committee's 2018 report on Brexit and Energy Security, considered the models for Norway and Switzerland:

- Norway, as an EEA and EFTA member, is also a member of the IEM. The Committee said a similar agreement would bring benefits but noted the Government had ruled it out.
- Switzerland has access to European energy markets through bilateral agreements, though it is excluded from market coupling (see Box 1). As part of this, Switzerland accepts some EU regulations, including the jurisdiction of the European Court of Justice. Switzerland sits physically at the centre of the EU energy system and is a key transit country for energy trading with over 40 interconnectors to its neighbours.

The Committee quotes the Head of International Energy Affairs at the Swiss Federal Office of Energy - Jean-Christophe Füeg - as saying that Switzerland's exclusion from market coupling resulted in "trade between Switzerland and the rest of is handled in a suboptimal way". Füeg also reflected on participating in the IEM:

> The EU wants to have an internal electricity market as one coherent thing, and either you are in it and abide by the rules or you are not in it. [For an exception to be made,] you have to have a very strong case that you as a country bring something to the internal electricity market that is indispensable to the functioning of the energy market […] I am not aware of the UK having anything that I would call a unique selling point; that is, something that you would bring to the IEM, both electricity and gas, which in the countervailing scenario of you not bringing it to the market would put the IEM in some sort of jeopardy.

Conversely, the Minister, Richard Harrington MP, highlighted three features unique to the UK:

> The first is bulk–our size relative to the Swiss and, therefore, our importance to the Single Market. The second is history–the fact that we helped to form it. Thirdly, there is the fact that we are already in it, unlike the Swiss, who are not.

On the Swiss experience relating to the UK, the Committee concluded that:

> The Swiss experience shows that mutual benefits and a history within the system are no guarantee of EU energy market access. While the Government appears confident that a post-Brexit energy relationship with the EU will favour the UK, we are concerned that this confidence is based on a misplaced expectation of pragmatism and that broader political considerations may affect the degree to which the UK can engage with the IEM post-Brexit.

85 Energy UK, EU and UK trade bodies call for an efficient future energy EU-UK relationship, 3 June 2020

Other agreements also exist, such as the Energy Community, a multilateral framework between nine Southeast and East European countries and the EU to integrate their energy markets. However, the key objective of the Energy Community is to extend the EU internal energy market rules and principles beyond on the basis of a legally binding framework called the Energy Community Acquis.

4. Implications for the island of Ireland

Energy policy is largely devolved to the Northern Ireland Executive, and the sector has different characteristics to those in Great Britain. This means there are specific energy policy issues. Some issues have been addressed in the Withdrawal Agreement, but there are also possible impacts from the UK's relationship with the IEM (above) which will be addressed as part of the future relationship negotiations.

Background information is available in the Northern Ireland Assembly Research and Information Service Briefing paper on Withdrawal Agreement, Protocol and Political Declaration – potential implications for the Single Electricity Market in Northern Ireland (May 2020).

4.1 The Single Electricity Market (SEM)

Since 2007, the island of Ireland has operated with a Single Electricity Market (SEM). This allows free trade of power across the island, with all generators and suppliers trading through a central mandatory wholesale market. It is regulated jointly by the Commission for Energy Regulation (CER) from the Republic of Ireland, and the Utility Regulator from Northern Ireland.[86] The decision-making body which governs the market is the SEM Committee. This body consists of the CER, the Utility Regulator as well as an independent member (who also has a deputy).

The SEM is established in national law in both the UK and Ireland, and is not the result of laws transposed directly from any EU-level legislation. However, the SEM has undergone significant change in order to comply with wider EU legislation and existing arrangements have (as of October 2018) been replaced by an enhanced wholesale market. This market has been called the Integrated Single Electricity Market or I-SEM, though as the enhanced market is still commonly referred to as the SEM, this paper will use the terms interchangeably.[87]

I-SEM is designed closely around the rules of the Internal Energy Market (IEM), meaning it uses market coupling for trading energy established by the European Network Codes, as described above.

The imports and exports of electricity between GB, Northern Ireland and Ireland (ROI) have fluctuated over time. In 2018, the island of Ireland was a net importer of electricity from the UK: the ROI is a net importer of electricity from Northern Ireland but is overall a net exporter to the UK through the Wales interconnector and Northern Ireland is a net importer of electricity from the Scottish Moyle Link even though it also exports to ROI.[88]

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86 CER Factsheet on the Single Electricity Market, April 2011

87 Information note, Proposed Amendment to the Electricity Regulation (Amendment) (Single Market) Act 2007

88 Department for Business, Energy and Industrial Strategy, Energy Trends. Table 5.6

Considerations for the Future Relationship

The Protocol on Ireland/Northern Ireland in the Withdrawal Agreement provides for the continuation of the SEM after the transition period ends, including continued participation by Northern Ireland operators in the EU emissions trading scheme. More detail on the provisions in the Protocol is set out in section 4.2 below

While the Protocol facilitates the continued operation of the SEM, the UK's future relationship with the IEM could impact the SEM. As the island of Ireland's only physical connections for gas and electricity to mainland Europe are via GB, the future of energy trading between the UK and the EU is key for the future of electricity import efficiency and security on the island. The Northern Ireland Assembly Research and Information service summarise the issue in their May 2020 paper on the SEM:

> The UK Government [states] that from 1 January 2021 cross border flows into and out of GB will no longer be governed by EU legislation. This means that new trading relationships may be required for trade between the GB market and the SEM via interconnectors. The extent to which new arrangements are necessary will depend on the outcome of the future relationship negotiations between the UK and the EU and any agreement reached on electricity trade. The UK Government, however, has stated that *"trade on interconnectors may be less efficient"* after the transition period.[89]

Unlike the electricity sector, the gas markets of the Republic of Ireland and Northern Ireland are separate. The Republic of Ireland's gas sector relies on imports of gas through Great Britain. This reliance on imports highlights that any future relationship on energy will be important not only for the UK's demand for energy, but also the flow of energy from the UK to EU countries such as Ireland.[90][91] Gas trading was not covered in the Withdrawal Agreement, but is referred to in the UK's draft energy agreement[92] (see below).

4.2 Negotiating positions for the Future Relationship

Following the EU referendum vote, representatives from both Northern Ireland and Ireland stressed that energy, and the SEM, should be a priority in the Brexit negotiations to prevent any risks to the market.[93][94]

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89 Northern Ireland Assembly Research and Information Service Briefing paper, Withdrawal Agreement, Protocol and Political Declaration – potential implications for the Single Electricity Market in Northern Ireland, May 2020

90 Department for the Economy, Northern Ireland Executive (BES0059), November 2017

91 Irish Government, Ireland and the negotiations on the UK's withdrawal from the European Union The Government's Approach, May 2017, p. 38

92 UK Negotiating Team, Draft working text for an agreement on energy, 19 May 2020

93 Northern Ireland Executive Office, Letter to Prime Minister from First Minister and Deputy First Minister, 10 August 2016

94 Irish Government, Ireland and the negotiations on the UK's withdrawal from the European Union The Government's Approach, May 2017, p. 38

2018 White Paper and previous Withdrawal Agreement

The May Government's July 2018 White Paper on the Future Relationship between the UK and the EU said the Government was "committed to facilitating the continuation of the SEM" and would "work with the EU to ensure the SEM is maintained in any scenario."[95]

The 2018 Withdrawal Agreement negotiated between the May Government and the EU included a reference to the SEM in the Ireland/Northern Ireland Protocol. The Protocol stated that some EU law governing wholesale electricity markets would continue to apply, should the protocol come into force. The legislation related to the generation, transportation and wholesale and cross-border trading of electricity, but not retail markets or consumer protection. The legislation included the rules for the IEM, the Directive that established ACER, the industrial emissions Directive on pollution prevention and control, and the Directive establishing the EU emissions trading scheme (EU ETS). This Withdrawal Agreement was not ratified and was superseded by the 2019 Withdrawal Agreement.

More information on the approach to energy in the previous Withdrawal Agreement is available in Section 8.6 of the Library briefing paper on The UK's EU Withdrawal Agreement (April 2019)

The Withdrawal Agreement and Political Declaration

The Johnson Government renegotiated the Withdrawal Agreement in 2019. This new Withdrawal Agreement was ratified by both Parties and entered into force on 1 February 2020.

The provisions relating to the SEM remained the same as the previous Withdrawal Agreement, but the implementation of the Ireland/Northern Ireland Protocol changed. Under the May Government, the protocol was described as a "back-stop" and was a temporary position in the case of no agreement at the end of the transition period. The Johnson renegotiation means the protocol will come into force at the end of the transition period and be the permanent end state for Northern Ireland, unless the Northern Ireland Assembly votes to change it. This means the SEM will continue to operate across the island of Ireland at the end of the transition period and Northern Ireland will remain subject to certain EU rules.[96]

The Political Declaration does not specifically mention the SEM, though contains general provisions on "cooperation" on electricity and gas trading between the parties (see section 3.4).

Both the EU and UK have published documents on the implementation of the Protocol. The EU document urges the UK to provide details and

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95 HM Government, The Future Relationship between the United Kingdom and the European Union, 12 July 2018, Cm 9593, para 138

96 Background information on the Northern Ireland protocol is available in the Library insight on Brexit and the Northern Ireland border.

timelines for implementation.[97] The UK document states the Protocol will be implemented by the Northern Ireland Executive with support from the UK Government, though does not give timelines.[98]

The House of Lords EU Select Committee published a report on The Protocol on Ireland/Northern Ireland in May 2020 stating:

> We welcome the commitment in Article 9 and Annex 4 of the Protocol to the continuation of the Single Electricity Market on the island of Ireland. This will benefit Northern Ireland and Ireland in terms of energy security, decarbonisation and energy prices.[99]

EU and UK Future Relationship Negotiating Positions

On 18 March 2020, the EU published a draft treaty including provisions on energy trading.[100] On 19 May 2020, the UK Government published a series of documents setting out its approach to the negotiations on the future relationship with the EU, including a draft energy agreement.[101]

The Single Electricity Market is not specifically mentioned in either the EU draft treaty, or the UK draft agreement on energy. However, as explained further above, as the island's only physical connections for gas and electricity to mainland Europe are via GB, the provisions related to the IEM (section 3 above) will likely be relevant to the SEM.

The UK's approach to the negotiations, published in February 2020, does refer to the SEM:

> The UK has undertaken domestic preparations to enable trade in electricity and gas over the interconnectors to continue from 1 January 2021 without an energy agreement. Existing arrangements, including work carried out with regulators and Transmissions System Operators, will ensure security of energy supply is unaffected. In Northern Ireland, the Ireland/Northern Ireland Protocol to the Withdrawal Agreement provides the basis for the continued operation of the Single Electricity Market.
>
> An energy agreement covering electricity and gas trading could improve these baseline arrangements by:
>
> a. facilitating efficient cross-border electricity and gas trade;
>
> b. facilitating technical cooperation between electricity and gas network operators and organisations in the planning and use of energy infrastructure connecting their systems; and
>
> c. supporting the integration of renewable power and investment in decarbonisation projects in the north seas.

The UK draft energy agreement does make a reference to the continuation of supply of natural gas, stating its provisions apply "without prejudice to the obligations that apply between the United

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97 European Commission, Technical note on the implementation of the Protocol on Ireland/Northern Ireland, 30 April 2020
98 Cabinet Office, The UK's Approach to the Northern Ireland Protocol, May 2020
99 House of Lords European Union Committee, The Protocol on Ireland/Northern Ireland, 1 June 2020, para 208
100 European Commission, Draft text of the Agreement on the New Partnership with the United Kingdom, 18 March 2020
101 UK Negotiating Team, Draft working text for an agreement on energy, 19 May 2020

Kingdom and Ireland under the United Kingdom and Ireland natural gas treaties."[102]

The fourth round of negotiations were completed in June 2020. While neither Michel Barnier (representing the EU)[103] nor David Frost (representing the UK)[104] specifically mentioned energy in their respective statements, both said overall progress had been limited.

Commentary

In response to the publication of EU and UK texts on the future relationship, EU and UK energy trade bodies released a statement, including concerns for the SEM:

> While the Northern Ireland Protocol protects the SEM on the island of Ireland, it is limited to the functioning on the island and does not cover the trading between the SEM and Great Britain. This means that as it stands there are no arrangements in place to maintain the Day-ahead market between GB and Ireland and no mechanisms to enable the collaboration of GB and SEM regulators on cross-border matters. The Energy deal will need to address these deficiencies to ensure that Ireland continues to function according the IEM rules and to ensure that customers on the island of Ireland are not penalised with higher prices resulting from lesser levels of efficiency and segmented, less liquid markets. The wind resources that can be activated in Ireland are greater than are likely to be used in Ireland, so the decarbonisation of Europe overall is advanced by enabling integration and cooperation.[105]

The Northern Ireland Assembly Research and Information Service briefing paper on the SEM (May 2020) prepared for the NI Committee for the Economy, identified numerous questions on the implementation of the Protocol for the SEM. These included possible impacts on security of supply and end user prices from potential inefficient interconnection, implementation of EU law in Northern Ireland, and scrutiny of future cooperation.[106]

Before the UK left the EU, a number of select committees assessed the potential impact of Brexit on the SEM. The House of Commons Northern Ireland Affairs Committee[107] and BEIS Committee each recommended that the Government protect the continued operation of SEM.[108] The House of Lords EU and Environment Sub-Committee concluded that the "complexity of maintaining the I-SEM will increase significantly" if the UK leaves the IEM and said the UK should plan for

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102 UK Negotiating Team, Draft working text for an agreement on energy, 19 May 2020
103 European Commission, Statement by Michel Barnier following Round 4 of negotiations for a new partnership between the European Union and the United Kingdom, 5 June 2020
104 Gov.uk, No 10 media blog, David Frost's statement following the conclusion of round 4 of negotiations with the EU, 5 June 2020
105 Energy UK, EU and UK trade bodies call for an efficient future energy EU-UK relationship, 3 June 2020
106 Northern Ireland Assembly Research and Information Service Briefing paper, Withdrawal Agreement, Protocol and Political Declaration – potential implications for the Single Electricity Market in Northern Ireland, May 2020
107 Northern Ireland Affairs Committee, Electricity sector in Northern Ireland, Third Report of Session 2016–17, HC 51, 26 April 2017
108 BEIS Committee, Leaving the EU: negotiation priorities for energy and climate change policy, *Fourth Report of Session 2016–17*, HC909, 2 May 2017

this eventuality, including by considering whether to devolve additional powers to Northern Ireland.[109]

[109] Lords EU Committee, Brexit: energy security, 10th Report of Session 2017-19, HL Paper 63, 29 January 2018, para.149-150

5. Climate Change

The UK is part of an international effort to combat climate change. Both the UK and the EU are parties to the United Nations Framework Convention on Climate Change (UNFCCC) and as such have signed up to international climate change obligations, such as the Kyoto Protocol and the Paris Agreement.

As part of its contributions to international efforts, the UK has domestic legislation and policies in place to reduce greenhouse gas emissions. The *Climate Change Act 2008* originally established long term statutory targets for the UK to achieve an 80% reduction in greenhouse gases by 2050 against a 1990 baseline (translated into five-yearly carbon budgets). In June 2019, the Government amended this headline target to a 100% reduction (compared to 1990 levels) by 2050 (otherwise known as net zero). Since 1990, the UK has cut greenhouse gas emissions by 40%.[110] Further discussion of the UK carbon budgets and the *Climate Change Act 2008* (as amended) is set out in the Library Briefing on UK Carbon Budgets and the Library Briefing on Legislating for Net Zero.

The UK also contributes to international efforts by participating in EU mechanisms such as the EU emissions trading system (EU ETS); and meeting EU targets, for example under the "effort sharing" legislation. The House of Lords Library briefing on Leaving the European Union: UK Climate Change Policy (July 2017) provides further background on climate change policies.

In December 2019 the European Commission published a communication called The European Green Deal.[111] It is described as resetting "the Commission's commitment to tackling climate and environmental-related challenges that is this generation's defining task."[112] It presented an initial roadmap of the key policies and measures needed to achieve a number of goals. The European Commission presented a proposal for a European Climate Law on 4 March 2020, which included a net zero by 2050 target.[113] The European Green Deal also includes proposals for a carbon border adjustment mechanism, which would apply a price to the carbon content of goods imported into the EU market.[114]

During the transition period, the UK must continue applying and implementing EU law that falls within the scope of the Withdrawal

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110 Committee on Climate Change, Reducing UK emissions, 2019 Progress Report to Parliament, 10 July 2019
111 European Commission website, A European Green Deal [accessed 26 February 2020]
112 European Commission, Communication from the Commission, The European Green Deal, COM(2019) 640 final, 11 December 2019
113 European Commission proposal for a regulation: European Climate law, 4 March 2020; and Europa pages on European Climate Law [accessed 16 March 2020]
114 European Commission website, A European Green Deal [accessed 11 June 2020]

Agreement. This includes remaining a full participant in the EU emissions trading scheme (see below).[115]

5.1 Negotiating positions of the EU and the UK Government

The precise nature of the future relationship between the UK and EU on climate change policies is unclear as negotiations are ongoing. Both the EU and the UK Government have set out their general positions and proposals on climate change at various points in the negotiation process. Some of the key positions are summarised below. Further detail on the latest negotiating positions is included with the relevant policy sections of this chapter.

2017-18

The Clean Growth Strategy (October 2017) explained the Government's view of the potential impact of leaving the EU on climate change policies, stating that domestic commitments would not be affected, but that the exact nature of the UK's future relationship with the EU, including in areas such as the EU ETS were "still to be determined":

> Leaving the EU will not affect our statutory commitments under our own domestic Climate Change Act and indeed our domestic binding emissions reduction targets are more ambitious than those set by EU legislation. The exact nature of the UK's future relationship with the EU and the long-term shape of our involvement in areas like the EU Emissions Trading System are still to be determined. There are also emerging opportunities to drive more action – for example by putting emission reductions and land stewardship at the heart of a post EU agricultural support policy. We will therefore carefully examine each area of common interest with our EU partners and work to deliver policies and programmes that are at least as beneficial as the current arrangements.[116]

The European Council's guidelines on the framework for future EU-UK relations (23 March 2018)[117] included a new Article requiring continued "close cooperation" in relation to global challenges, "in particular in the areas of climate change and sustainable development, as well as cross-border pollution".[118] This approach was reflected in the subsequently agreed Political Declaration on the Framework for the Future Relationship, as below.

The May Government's White Paper on the Future Relationship between the UK and the EU (12 July 2018)[119] committed to "maintaining high standards on climate change" and continuing to

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115 Gov.uk, Meeting climate change requirements from 1 January 2021, 28 April 2020 [accessed 3 June 2020]
116 Gov.uk, Clean Growth Strategy, 12 October 2017
117 European Council, Article 50 Guidelines, 23 March 2018
118 European Council, Article 50 Guidelines, 23 March 2018. See Library Briefing on Brexit: new guidelines on the framework for future EU-UK relations (19 April 2018) for further discussion of the Council's guidelines.
119 HM Government, The Future Relationship between the United Kingdom and the European Union, 12 July 2018, Cm 9593

meet the UK's international obligations in this area.[120] The May Government's November 2018 Withdrawal Agreement did not include any explicit climate change provisions, with the exception of within the 'backstop' in the Ireland / Northern Ireland Protocol which committed the UK to maintaining a level playing field with the EU in relation to environmental protection, including climate change, should the 'backstop' come into force. This was superseded by the 2019 Withdrawal Agreement and was not ratified.

2019

In a May 2019 consultation document on the *Future of UK Carbon Pricing*, the UK Government and devolved Administrations stated that (rather than remaining in the EU ETS) securing a linking agreement with the EU for a linked UK ETS was their preferred option. Alternative carbon pricing options were also consulted on to address a scenario where a linking agreement cannot be secured with the EU.[121] The consultation closed on 12 July 2019 and the Government published its response on 1 June 2020.[122] It confirmed that the Government would establish a UK ETS and was open to it being linked to the EU ETS.

On 19 August 2019, Prime Minister Johnson wrote to the President of the European Council (Donald Tusk) stating that:

> Although we will remain committed to world-class environmental, product and labour standards, the laws and regulations to deliver them will potentially diverge from those of the EU. That is the point of our exit and our ability to enable this is central to our future democracy.[123]

2020

The ratified Withdrawal Agreement came into force on 1 February 2020. It does not contain any specific provisions or exceptions on climate change. The Protocol on Ireland/Northern Ireland contained within the Withdrawal Agreement does not contain the level playing field provisions (including in relation to climate change) of the May Government's Withdrawal Agreement. Article 9 of the Protocol the continues the operation of the Single Electricity Market in Northern Ireland from the end of the transition period, which includes Northern Ireland remaining in the EU emissions trading scheme (see more in section 4.2 above).

The Political Declaration commits the parties to global cooperation on climate change and reaffirming commitments to international agreements such as the Paris Agreement. It also includes commitments from both parties to ensure a 'level playing field' in the future relationship with regard to a number of different matters including climate change.[124] This remains the same as the May Government's Political Declaration. More information on the Ireland/Northern Ireland

120 HM Government, The Future Relationship between the United Kingdom and the European Union, 12 July 2018, Cm 9593, Paras 107 and 108, 119 and 120
121 Gov.uk, Consultation on the Future of UK Carbon Pricing, 2 May 2019
122 Gov.uk, Consultation outcome, The future of UK carbon pricing, 1 June 2020 [accessed 3 June 2020]
123 Gov.uk, PM letter to His Excellency Mr Donald Tusk, 19 August 2019
124 HM Government, New Political Declaration, 19 October 2019, Articles 13 and 14

Protocol is available in the Library Briefing Paper on the October 2019 EU UK Withdrawal Agreement and the Library Insight on Brexit and the Northern Ireland Border.

The Prime Minister's written statement on 3 February 2020 stated that the Government would not agree to measures in climate change policy and other level playing field areas going "beyond those typically included in a comprehensive free trade agreement". The statement set out the Government's belief that the two parties should recognise their respective commitments to maintaining high standards, agreeing to avoid using trade distorting measures and "confirm that they will uphold their international obligations".[125]

The EU's negotiating directives were adopted on 25 February 2020.[126] The envisaged partnership included the "fight against climate change" as a key objective, specifically mentioning that the Paris Agreement should constitute an essential element. In section 15 on *level playing field and sustainability,* climate change is included as an area in which the envisaged partnership should "uphold common high standards, and corresponding high standards over time with Union standards as a reference point".[127] More information on the level playing field is available in the Library Briefing Paper on the UK-EU future relationship negotiations: level playing field

The UK Government's policy paper: the future relationship with the EU, the UK's approach to negotiations (27 February 2020)[128] did not include climate change within the proposals for a comprehensive free trade agreement. Instead, climate change and carbon trading were included under a proposed *Agreement on Energy* (the text of which was published by the Government later in May 2020). It stated that "the UK is open to considering an agreement on energy if it reflects its interests and as long as it respects the fact that the UK will make independent decisions on its energy policies".

The European Commission published a draft treaty text on 18 March 2020.[129] In line with the negotiating directives, the EU included the fight against climate change as an "essential element" of the partnership as well as within the level playing field provisions.

The UK Government published the ten draft treaty texts it had tabled in the negotiations on 19 May 2020. In line with its approach to date, it included climate change within its draft energy agreement text, rather than in its draft comprehensive free trade agreement. The draft energy agreement includes draft provisions on "the fight against climate change" in line with the Government's command paper and a placeholder on carbon pricing rather than detailed legal provisions

125 HCWS86 [on UK / EU relations] 3 February 2020
126 Council of the EU, ANNEX to COUNCIL DECISION authorising the opening of negotiations with the United Kingdom of Great Britain and Northern Ireland for a new partnership agreement, 25 February 2020
127 EU negotiating directives, para 94
128 HM Government, The future relationship with the EU, the UK's approach to negotiations, 27 February 2020, CP211
129 European Commission, Draft text of the Agreement on the New Partnership with the United Kingdom, 18 March 2020

(noting that it will be subject to further discussions). The energy agreement has separate governance arrangements to the trade agreement (see section 3.4 above).

The UK's chief negotiator, David Frost, wrote to Michel Barnier on 19 May 2020 stating that the UK is committed to high standards but could not accept the EU's level playing field proposals:

> We have been clear that the UK will have high standards and, in many cases, higher standards than those in the EU. However, we cannot accept any alignment with EU rules, the appearance of EU law concepts, or commitments around internal monitoring and enforcement that are inappropriate for an FTA. [130]

Reports from the fourth round of negotiations in June 2020 was that no significant progress was made in reaching an agreement.[131]

Further information

For more information on the UK and EU's negotiating positions, see:

- Library Briefing paper on The UK-EU future relationship: summary of positions
- Library Briefing paper on The UK-EU future relationship: the March 2020 EU draft treaty and negotiations update, 27 May 2020
- Library Briefing paper on The UK-EU future relationship: Level playing field

Some key areas of climate change policy subject to ongoing negotiations between the UK and EU are discussed below.

5.2 International framework

The United Nations Framework Convention on Climate Change (UNFCCC) was adopted during the 1992 Earth Summit, held in Rio de Janeiro, Brazil. It entered into force in 1994 and has been ratified by 196 States (including both the EU and the UK) which constitute the "Parties" to the Convention. The objective of the Treaty, set out in article 2 of the Convention, is to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." Every year a Conference of the Parties takes place (known as COPs).

The UK will host COP26 in November 2021 and Italy will host the pre-COP events. COP26 was postponed from 2020 due to the Covid-19 pandemic. For more information see the Library Briefing Paper on COP26: the international climate change conference, Glasgow, UK.

The Kyoto Protocol

The Kyoto Protocol was adopted at COP3 in Kyoto in 1997 and entered into force in February 2005, with two commitment periods (2008-2012 and 2013-2020). Its main goal is to reduce certain greenhouse gas

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130 Gov.uk Letter to Michel Barnier, 19 May 2020
131 Politico, No significant progress in Brexit talks, 6 May 2020 [accessed 16 June 2020]

emissions[132] and parties to the Protocol (including the UK) must meet their targets primarily through national measures. An additional means by which Parties can meet their targets is through the market-based mechanisms established by the Protocol: the clean development mechanism; joint implementation; and emissions trading. The UK's national Kyoto Protocol Registry is located within the Consolidated System of European Registries and facilitates the trading of Kyoto Protocol emissions units.[133]

Under the Kyoto Protocol, EU countries (and Iceland) have agreed a joint commitment to meet a 20% reduction target compared to 1990 levels. This is in line with the EU's own 2020 targets.[134] EU countries meet these targets through the EU ETS and, for sectors not in the EU ETS, through the "effort sharing decision" which sets binding annual national emission reduction targets.[135]

The UK is a party to the UNFCCC and has ratified the Kyoto Protocol separately to the EU. The Government has confirmed it remains committed to meeting its international climate change obligations.[136] Subject to any extension, the end of the transition period (31 December 2020) will align with the end of the second commitment period under the Kyoto Protocol. The Withdrawal Agreement ensures that certain reporting obligations relating to 2019 and 2020 continue to apply to the UK until the end of the second commitment period of the Kyoto Period (2013-20).[137] During the transition period, UK businesses continue to have access to the Kyoto Protocol National Registry within the UK section of the Consolidated System of European Registries, and can continue to access their accounts.

The Paris Agreement

In December 2015, agreement was reached at COP21 in Paris to keep a global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C.[138] Both the EU and the UK are signatories to the Paris Agreement.

The Paris Agreement requires each Party to prepare, communicate and maintain successive (every 5 years) nationally determined contributions (NDCs) of the emissions reductions that it intends to achieve. NDCs were first submitted by Parties in 2015. Parties are expected to put forward enhanced or updated NDCs in 2020. The EU currently has an

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132 Six greenhouse gases for the first commitment period; seven greenhouse gases for the second commitment period.

133 More information on the mechanisms is available on the UNFCCC pages: Mechanisms under the Kyoto Protocol.

134 European Commission, Climate Action, Kyoto 2nd commitment period (2013-2020) [accessed 8 November 2018]

135 See: European Commission, Climate Action, Effort sharing: Member States' emissions targets [accessed 8 November 2018]

136 See: Gov.uk Meeting climate change requirements if there's no Brexit deal, updated 12 April 2019 [accessed 26 July 2019]

137 Article 96

138 UNFCCC, The Paris Agreement [accessed 3 August 2017]

overall NDC on behalf of its Member States (including the UK), acting jointly.

COP25 was held in Madrid, Spain with a key aim to finalise the "Paris rulebook" in order to ensure full implementation from 2020. However, the talks did not reach the consensus hoped for with some of the more technical elements pushed out to COP26 in the UK.

Further information is available in the Library Briefing Paper on Chile Madrid Climate change conference: COP25; and the Library Briefing Paper on COP26: the international climate change conference, Glasgow, UK.

Background information is available in the House of Commons Library Briefing Papers on the Paris Climate Change Conference (27 September 2016) and the Paris Agreement and Marrakech Climate Conference (25 November 2017).

The future relationship

The UK is a party to the UNFCCC and has ratified the Paris Agreement separately from the EU.[139] The Government has confirmed it remains committed to the Paris Agreement and that it will continue to be bound by the Paris Agreement as an individual party under international law. The Government guidance states:

> The UK will also remain a Party to international climate change agreements, including the Paris Agreement. Its commitment to them will remain as strong as ever and will be unaffected by leaving the EU.[140]

The UK has confirmed it will submit "its own increased NDC" in advance of COP26:

> Following our departure from the EU, the UK will be bringing forward its own, increased NDC well ahead of COP26. The UK NDC will be built on the foundations of well-established UK analysis and policy development for domestic climate change mitigation, used to set the UK's fifth carbon budget (2028-32) and described in the Clean Growth Strategy. In its Net Zero advice, the Committee on Climate Change was clear that the Clean Growth Strategy continues to offer the right framework for the ambitious action needed to deliver net zero.[141]

The EU has been silent on the possibility of formally requesting the UK to continue to participate in joint fulfilment of a new NDC. It has said:

> In 2020, the EU will update its NDC as agreed in Paris, taking into account the need to increase clarity, transparency and understanding of its NDC.[142]

An independent climate change think tank, E3G, published a report on Climate change in the Brexit negotiations (May 2020) which explains the impact of the UK leaving the EU on the EU's NDC ambitions:

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139 Gov.uk news story, UK ratifies the Paris Agreement, 18 November 2016 [accessed 30 August 2018]
140 Gov.uk, Meeting climate change requirements from 1 January 2021, 28 April 2020 [accessed 3 June 2020]
141 PQ 12820 [on climate change] 14 February 2020
142 Council of the EU, Preparations for UNFCCC meetings, 4 October 2019

The withdrawal of the UK from the EU effort sharing regulation makes increasing EU ambition more difficult. The UK, like other larger and richer countries, took on a more ambitious share of the EU target than the EU average. Privately several EU Member States and Parliamentarians have expressed concern that the UK's absence may limit the ability to agree an ambitious new target, especially the 55% reduction at the top end of the considered range.[143]

Negotiating positions

The latest negotiating positions from each party in relation to international climate change obligations and the Paris Agreement, and their interaction with domestic law and policy, are set out below.

UK position	EU position
Within its draft Energy Agreement (published May 2020), the UK proposals include that: • the Parties each affirm their commitment to effectively implement the Paris Agreement; • each Party retains the right to establish its own climate change priorities and to adopt or modify its laws and policies accordingly • each Party shall seek to ensure […] high levels of climate protection, and shall strive to continue to improve such laws and policies	The EU draft treaty text (March 2020) proposals include as "essential elements" to the agreement, that: • each Party shall respect the Paris Agreement and the process set by UNFCCC, and refrain from any acts or omissions that would undermine its adherence to or materially defeat the object and purpose of the Paris Agreement • the Parties shall advocate the fight against climate change in international fora, including by engaging with other countries and regions to increase their level of ambition in the reduction of greenhouse emissions Within the Level Playing Field Provisions, the EU includes: • each Party shall effectively implement the UNFCCC and the Paris Agreement.

Commentary

In September 2018, businesses and industry bodies called on the then UK Prime Minister and President of the European Commission to agree to cooperate on implementing the Paris Agreement as one of several negotiating priorities on energy and climate change set out in an open letter.[144] A report from E3G (a climate change think tank) on *Brexit and Climate cooperation, Implications for the Paris Agreement and net zero*

[143] E3G Briefing Paper, Climate change in the Brexit negotiations, Shane Tomlinson, May 2020 [accessed 16 June 2020]

[144] Open letter to Jean-Claude Juncker and Theresa May, Prioritising EU27 / UK cooperation on climate change and energy, 4 September 2018, signed by British Irish Chamber of Commerce, EDF, Electricity Association of Ireland, Energy UK, Earth Capital Partners, Renewable UK, Unilever, WHEB, WindEurope, Loftbergs [accessed 5 September 2018]

(October 2018) made a number of recommendations, including that the EU and the UK should agree a broad scope for climate cooperation and that a decision by the UK to set out an independent NDC would still be compatible with high levels of climate cooperation with the EU (see more below).[145]

On 6 May 2020, the *Financial Times* reported that the EU desire to include commitment to the Paris Agreement among the essential elements of the future partnership was a source of disagreement with the UK in the negotiations.[146] The EU indicated that it wants such a commitment in all its future trade deals. A Government spokesperson said the UK was "absolutely committed to tackling climate change" but that it was opposed to embedding legally binding pledges into any deal with the EU:

> "The agreements we reach with the EU should reaffirm both parties' commitments to the Paris agreement and recognise both sides' right to decide their own regulation to meet our respective climate goals," the spokesperson said. "This does not require an additional binding international legal commitment."[147]

In June 2020, a group of EU and UK energy trade bodies welcomed the commitments of both parties to international and domestic climate change goals:

> We welcome that both negotiating Parties remain fully committed to the goals of the Paris Agreement and to their own domestic legislations and climate targets. We are confident that considering the commitments in law and from governments, reaching zero emissions by 2050 remains the priority.[148]

A blog by an environmental law lecturer at Sussex University argued that the EU's proposal "poses virtually no threat unless the UK withdraws altogether from the Paris Agreement"

> Another potential area of concern is that the EU has listed upholding the Paris Agreement as an essential element of the Agreement (Article 5 of the 'Common Provisions' in the EU draft FTA), meaning that it could suspend the Agreement for non-compliance. This is not specific to the UK, and poses virtually no threat unless the UK withdraws altogether from the Paris Agreement, particularly considering that it allows countries to determine their own contributions to mitigating climate change. Indeed, as a climate leader, the UK might well advocate the inclusion of such conditionalities in its own FTAs.[149]

An E3G report on Climate change in the Brexit negotiations (May 2020) identified the UK's narrower approach to climate change (limiting it to references within the Energy Agreement) versus the EU's wider

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145 E3G, Brexit and Climate cooperation, Implications for the Paris Agreement and net zero, 2 October 2019 [accessed 1 November 2018]

146 Financial Times, Brussels and Britain clash over climate conditions in trade deal, Jim Brunsden, 6 May 2020 [accessed 16 June 2020] [subscription needed]

147 Financial Times, Brussels and Britain clash over climate conditions in trade deal, Jim Brunsden, 6 May 2020 [accessed 16 June 2020] [subscription needed]

148 Energy UK, EU and UK trade bodies call for an efficient future energy EU-UK relationship, 3 June 2020 [accessed 12 June 2020]

149 UK Trade Policy Observatory, Environment and climate change in the EU-UK negotiations: Arguing the toss over nothing, blog by Dr Emily Lydgate [accessed 16 June 2020]

approach in its main trade agreement. E3G argue that the UK should broaden its approach:

> The UK negotiating position on climate also needs revision. The current texts limit climate change and references to the Paris Agreement within the proposed energy agreement. This ignores the role of climate within transport, industry, agriculture and the environment. The UK should revise its position to include a climate change chapter and direct reference to the Paris Agreement in its main free trade agreement proposal as well as the separate energy agreement.[150]

5.3 Carbon pricing

There are two main types of carbon pricing: carbon taxes and emissions trading systems.[151]

The UK's participation in the EU ETS

One of the main carbon pricing mechanisms in the UK is the EU emissions trading system (EU ETS). The UK also has a carbon price floor to support the EU ETS price (see Box 4). The UK remains a full participant in the EU ETS during the transition period.

The EU ETS is described as the "largest multi-country, multi-sector greenhouse gas emissions trading system in the world" covering more than 11,000 power stations and industrial plants across the EU with around 1,000 of these in the UK.[152] [153]

The mandatory cap-and-trade scheme was launched in 2005 and has since undergone a number of reforms. It is central to the EU's climate change target of reducing greenhouse gas emissions by 40% by 2030 compared to 1990 levels.

The EU ETS sets an EU-wide cap on the total amount of greenhouse gas emissions from energy intensive sectors including power stations and industrial plants. The cap decreases over time (1.74% each year) to reduce overall emissions.[154] Airlines operating between the 31 countries are covered within the EU ETS but via a separate cap. Approximately 140 UK-administered aircraft operators take part in the EU ETS.[155]

Companies either receive allowances (EU Allowances or EUAs) free or purchase them during auctions of allowances issued by Governments.[156] Surplus allowances can also be traded on the carbon market. The number of allowances held by the company at the end of an EU ETS

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150 E3G Briefing Paper, Climate change in the Brexit negotiations, Shane Tomlinson, May 2020 [accessed 16 June 2020]

151 \More information is available on The World Bank, Pricing Carbon [accessed 16 June 2020]

152 BEIS, Participating in the EU Emissions Trading System (EU ETS), 31 July 2017

153 The greenhouse gases covered by EU ETS are carbon dioxide (CO_2), nitrous oxide (N_2O) and perfluorocarbons (PFCs).

154 European Commission, Climate Action, 'Emissions cap and allowances', [accessed: 20 February 2018]

155 Gov.uk, Meeting climate change requirements if there's no Brexit deal, 12 October 2018

156 Each allowance gives the holder the right to emit one tonne of carbon dioxide or the equivalent of nitrous oxide and perfluorocarbons. (EU Commission, Climate Action, 'Emissions cap and allowances', accessed 20 October 2016

year must be equal to, or more than, the total volume of emissions from its installation. Compliance is assessed and verified by an independent third party, and the company must surrender its allowances for the preceding calendar year by no later than 30 April the following year. The EU ETS is currently in Phase III (2013-2020), which aims for an overall emissions reduction of 21% compared to 2005 emissions for power stations and industrial plants.

In Phase III, power stations purchase all their allowances whereas other industries still receive some of their EUAs via free allocation. Both sectors can also buy international credits from emission-saving projects around the world.[157] At the end of each year, if a company does not have enough EUAs to cover all its emissions it is required to pay a fine.[158]

The market price of EUAs fell dramatically after the financial crisis in 2008 and stayed low for several years. From late 2011 until 2017, EUAs cost less than €10 per tonne[159] although in 2018 the price started to rise and reached over €28 in 2019.[160] In the earlier years, several Member States and various EU ETS stakeholders considered the EU carbon price to be too low to create a strong enough incentive for polluters to undertake the required investment in low-carbon technologies and to drive low-carbon innovation.

As a result of the low prices, the EU introduced several measures to reduce the supply of allowances going forward, including removing surplus allowances from the market. The UK also responded to the issue of the low cost of carbon in 2013 by introducing the Carbon Price Floor (CPF), a UK-only carbon tax which supplements the price of carbon through the EU ETS (see Box 2). Since it was introduced, the CPF has increased the price of carbon for UK customers and helped to drive coal almost completely out of the UK energy mix.[161] There is no EU-wide floor price for EUA auctions.

Box 4: Carbon price floor

The Carbon Price Floor (CPF) is a UK Government policy implemented to support the EU ETS. The CPF taxes fossil fuels used to generate electricity via Carbon Price Support rates. The price floor consists of two components which are paid for by energy generators in two different ways: (i) the EU ETS allowance price; and (ii) the Carbon Price Support (CPS), which tops up the EU Allowance prices, as projected by the Government, to the carbon price floor target.

The Treasury confirms the target carbon price and CPS rates three years in advance of delivery at each Budget, and all revenue from the CPF is retained by the Treasury.

When the CPF was introduced, it was due to rise every year until 2020 (to a price of £30/tCO_2). At Budget 2014 the Government announced that the CPS component of the floor price would be capped

157 European Commission, Climate Action, 'Free allocation', [accessed: 20 February 2018]
158 European Commission, Climate Action, 'The EU Trading System (EU ETS)', [accessed: 20 February 2018]
159 CarbonBrief, Q&A will the reformed EU ETS raise carbon prices? 6 December 2017 [accessed 3 September 2018]
160 EUAs were at EUR 21.06 on 31 August 2018 and EUR 28.99 on 26 July 2019 according to ICE EUA futures via Sandbag and Quandl.
161 BEIS, Coal Generation In Great Britain The pathway to a low-carbon future: consultation document, November 2016

at a maximum of £18/tCO_2 from 2016 to 2020 to limit the competitive disadvantage faced by business and reduce energy bills for consumers. This price freeze was extended to 2021 in Budget 2016. Budget 2018 stated that from 2021-22 the Government will seek to reduce the CPS if the total carbon price remains high.

Background information on the carbon price floor is available in the House of Commons Library briefing: Carbon Price Floor (CPF) and the price support mechanism (8 January 2018),

The future relationship

The UK will leave the EU ETS at the end of the transition period. Northern Ireland operators will remain in the EU ETS by virtue of the Ireland/Northern Ireland Protocol in the Withdrawal Agreement in relation to the continued operation of the Single Electricity Market in Ireland (see more in section 4 above).[162]

The May Government committed in its Clean Growth Strategy (October 2017) to carbon pricing as a means of driving decarbonisation.[163] This has been reiterated by the current Government and the devolved Administrations throughout the negotiation process:

> The UK government and the devolved administrations are firmly committed to carbon pricing as an effective tool for achieving our carbon emissions reductions targets for net zero.[164]

However, until June 2020, the type of carbon pricing the Government planned to implement at the end of the transition period was not known. Whether or not the UK's future carbon pricing will be linked to the EU emissions trading system (EU ETS) remains subject to negotiations and is not yet known. The UK Government has said it "would be open to considering a link between a UK ETS and the EU ETS, if it suits both sides' interests".[165]

In May 2019, the UK Government and the devolved Administrations launched a 12-week joint consultation on the "future of UK carbon pricing" (12 May-12 July 2019), which sought views on the approach to UK carbon pricing following Brexit.[166] The consultation set out a number of carbon pricing options. It identified the establishment of a UK national emissions trading system (UK ETS) linked to the EU ETS following the end of Phase III as the preferred option of the UK Government and the devolved Administrations. This approach is not without precedent. Although Switzerland is not a participant in the EU ETS, in November 2017 it signed an agreement (subject to ratification) to link its emissions trading system with the EU ETS.[167] The agreement entered into force on 1 January 2020. Linking a UK ETS with the EU

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[162] Article 9 and Annex 4 of the Ireland / Northern Ireland Protocol help to maintain the continued operation of the Single Electricity Market by providing for Northern Ireland power generators to continue to participate in the EU ETS after the transition Period.

[163] HM Government, Clean Growth Strategy, October 2017, p. 45

[164] Gov.uk, Meeting climate change requirements from 1 January 2021, 28 April 2020 [accessed 3 June 2020]

[165] Gov.uk, Consultation outcome, The future of carbon pricing, 1 June 2020

[166] Gov.uk consultation, The future of UK carbon pricing, 21 May 2019

[167] EU, EU and Switzerland sign agreement to link emissions trading systems, 23 November 2017

ETS would require agreement between both parties and be subject to negotiation. Overall the process to link the Swiss ETS to the EU ETS took 10 years.[168]

If the UK remained part of, or linked to, the EU ETS, the EU would continue to be responsible for developing and enforcing the rules. The Swiss Government will cede some regulatory control to Brussels as part of linking its ETS market to that of the EU ETS. Subject to the outcome of negotiations, the UK Government may therefore have limited ability to bring about any major reforms of the EU ETS. However, in March 2018 evidence to a House of Lords Committee, the then BEIS Minister noted that the UK has been part of the current negotiations for Phase 4 (up to 2030) and much of the final detail will happen during the period when the UK is still an active participant, thus giving some clarity up to 2030.[169]

The 2019 consultation provided the following explanation on linking agreements:

> Any linking agreement requires a UK ETS to which the EU ETS could link. It is therefore necessary to develop a UK ETS in the first instance. When two ETSs are linked, each system recognises the allowances of the other. This has the effect of creating a single carbon price across both systems. Linking carbon markets can lead to more efficient emissions reduction, since allowances are tradable across a larger pool of participants. This results in a larger number of cost-effective abatement opportunities, as well as greater market liquidity for trading purposes, ensuring lower transactional costs and minimising the risk of market abuse. As well as increasing the efficiency of the system, a link between a UK ETS and the EU ETS would ensure a smooth transition for the relevant sectors. Given that a linking agreement would be subject to negotiation, it is not possible to outline the precise details of such an agreement at this stage.[170]

The UK's proposed scope of a UK ETS is that it matches the scope of the EU ETS both in respect of sectors and greenhouse gases covered. The consultation also sought views on the potential to expand scope in later years of UK ETS operation.

The UK Government and the devolved Administrations also wrote to the Government's independent advisers, the Committee on Climate Change (CCC), on 2 May 2019 to request advice on a UK emissions trading scheme applying to the power, industry and aviation sectors, which would either be a standalone UK ETS or a UK ETS linked to the EU ETS.[171] In response, the CCC supported the Government's preference for a linked UK-EU ETS, although it noted that carbon pricing alone will not provide sufficient decarbonisation and needs to be used as part of a suite of policy instruments. The Committee also recommended that the

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168 Council of the EU press release, Linking of Switzerland to the EU emissions trading system - entry into force on 1 January 2020, 9 December 2019 [accesse

169 House of Lords Select Committee on the European Union, Oral evidence: Minister of State for Energy and Clean Growth, 21 March 2018, Q8

170 Gov.uk consultation, The future of UK carbon pricing, 21 May 2019, p. 16

171 Gov.uk, letter to CCC on UK ETS, 2 May 2019

cap of the linked UK ETS be set based on the cost-effective path to the UK's new net zero target.[172]

The House of Lords EU Energy and Environment Sub-Committee concluded an inquiry on Post-Brexit carbon pricing which examined the options of a UK ETS linked to the EU ETS and a carbon emissions tax. It did not publish a report but wrote a number of letters to ministers on this topic.

A UK ETS

The UK Government and devolved Administrations published the response to the carbon pricing consultation on 1 June 2020.[173] It set out plans for a new UK emissions trading scheme to replace the EU ETS, which was designed by the UK Government jointly with the Scottish Government, Welsh Government and Northern Ireland Executive. Key elements of the UK ETS include:

- Phase I of the new UK ETS would run from 2021 to 2030
- the UK ETS could operate as a linked or standalone system
- the UK ETS will apply to energy intensive industries, power generators and aviation.
- A proportion of allowances will be allocated for free; auctioning will continue to be the primary means of getting allowances. The auction reserve price will be £15 (nominal), with a mechanism in place to address any high price spikes or adjustments needed.
- The cap will initially be set 5% below the UK's notional share of the EU ETS cap for Phase IV of the EU ETS. This will be reviewed following the CCC's advice on the sixth carbon budget and net zero later in 2020. The Government's aim is that any changes needed as a result of this will be implemented by 2023 if possible and by no later than January 2024.

The UK Government will also publish a consultation in late 2020 on the design of a carbon emissions tax as an alternative to a UK ETS "to ensure a carbon price remains in place in all scenarios".

Negotiating positions

The latest negotiating positions from each party in relation to carbon pricing are set out below.

UK position	EU position
The UK draft energy agreement (published in May 2020) includes a placeholder on carbon pricing rather than proposed legal drafting. It states that the UK is open to linking any UK ETS with the EU ETS if it suited both sides' interests but that it would need to recognise both	The EU draft treaty (March 2020) includes carbon pricing within the Level Playing Field Provisions: • The UK shall implement a system of carbon pricing of at least the same scope and effectiveness as that provided by the EU ETS.

[172] CCC, letter to the Rt Hon Kwasi Kwarteng MP, BEIS, 7 August 2019
[173] Gov.uk, Consultation outcome, The future of carbon pricing, 1 June 2020

parties as sovereign equals with their own domestic laws.	• Should the UK create its own emissions trading system and request it to be linked to the EU ETS, the Union shall give serious consideration to such request, provided that it does not risk affecting the integrity of the EU ETS, in particular its balance of rights and obligations, and that an increase in scope and effectiveness is ensured.

Commentary

The Committee on Climate Change wrote to the Government in March 2020 in response to a formal request from the UK Government, Scottish Government, Welsh Government and Northern Ireland Assembly regarding the future of carbon pricing in UK, specifically in relation to the successor to the EU Emissions Trading Systems (ETS) after EU exit. The Committee made a number of recommendations including that leaving the EU provides the UK with an opportunity to match the ambition of its own approach to an emissions trading scheme to the UK's own circumstances, in particular its net zero target:

> Leaving the EU presents an opportunity for the UK to align the ambition of its trading scheme to the UK's own circumstances. Ultimately, that requires a tightening of the cap of the scheme in line with a trajectory consistent with the UK's Net Zero target for 2050.[174]

The Committee went onto say that:

> We also note a change in language over linking to the EU ETS […] It is now described as an option at a later date, and if desired. The Committee remains of the view that a UK ETS should link to the EU ETS as soon as is practicable.[175]

The industry trade body, Energy UK's interim chief executive welcomed the Government's approach:

> We strongly support Government establishing a UK ETS linked to the EU ETS and back its efforts to agree this approach with the EU. This is the best long-term carbon pricing mechanism to continue driving decarbonisation at the lowest cost to consumers, which will allow us to benefit from the liquidity of the world's largest carbon market and help us meet our net zero target by 2050.
>
> In the event that a linking agreement cannot be secured in time for 1 January 2021, we welcome Government's decision to introduce stability measures such as an Auction Reserve Price (ARP) to protect a newly-established stand-alone UK ETS from market shocks and volatility due to its smaller size. It is positive to have clarity on the level of the ARP (£15), however, we urgently need clarity from the Treasury of the level of the Carbon Emission

174 CCC letter, The future of carbon pricing to The Rt Hon Kwasi Kwarteng MP, dated March 2020, published 1 June 2020
175 CCC letter, The future of carbon pricing to The Rt Hon Kwasi Kwarteng MP, published 1 June 2020

> Tax (CET) or at least the methodology in July. This will ensure that power operators have full visibility of the total carbon price, whether via a standalone UK ETS or CET fallback, in January 2021.[176]

The E3G report on Climate change in the Brexit negotiations (May 2020) noted that although both the UK and EU seem to have significant alignment in their approach, linking trading systems can take years of negotiation:

> However, although many of the high-level objectives have significant alignment the pathway to achieving this is far from automatic. The experience of linking the Swiss emissions trading system to the EU-ETS required years of negotiation to work through all the detail. It is therefore vital that substantive negotiations on these issues begin as soon as possible.[177]

[176] Energy UK, Energy UK responds to UK Government's ETS proposal, 2 June 2020
[177] E3G Briefing Paper, Climate change in the Brexit negotiations, Shane Tomlinson, May 2020 [accessed 16 June 2020]

6. Annex: Previous material on preparations for a possible "no deal" scenario (2017-January 2020)

Before the UK left the EU on 31 January 2020, both parties put in place contingency plans in case of a "no deal" scenario where a withdrawal agreement was not agreed. Although no longer required, the following sections set out the plans that were made for this purpose for background information. This text therefore refers in part to issues resolved by the Withdrawal Agreement or subsequent policy developments.

6.1 Civil Nuclear

As discussed in more detail above, the UK prepared for leaving Euratom, by passing the *Nuclear Safeguards Act 2018* and negotiating replacement Nuclear Cooperation Agreements for trade. This preparation meant a no deal Brexit would not have had a disruptive impact on those aspects of the UK's civil nuclear industry.

For other functions of Euratom, such as supply arrangements, import licences, and nuclear research, a no deal Brexit may have affected the continuation of existing arrangements, and required management through proposed changes in funding or practice:

- **Nuclear trade:** Before the UK's departure from the EU and Euratom, the Government published a number of guidance documents on trade of nuclear related materials after Brexit. Import licences for certain nuclear materials from EU countries, were not required before Brexit, but would have been required if there was no deal, and some supply contracts for nuclear material which involved a Euratom member may have needed to be re-approved. Shipping operators also needed to ensure they had applied for the correct authorisations and used the correct documentation when shipping radioactive waste and spent fuel.[178]
- **Radioisotopes:** In preparation for the possibility of the UK leaving the EU with no Brexit deal, the Government announced plans to stockpile medicines, but as radio-isotopes have short half-lives, they cannot be stockpiled. Due to concerns of possible custom delays on road and rail routes, the May Government asked suppliers "to ensure they have plans in place to air freight [radioisotopes] to avoid any border delays that may arise".[179]

[178] See also Gov.uk, Civil nuclear regulation if there's no Brexit deal, guidance withdrawn on 12 August 2019
[179] PQ 176162, [on Radioisotopes], 11 October 2018

Some stakeholders questioned whether the air freight plans would be an efficient replacement for current arrangements.[180] In June 2019, the Department of Health and Social Care announced it would tender to secure an "express freight service" to provide "end-to-end" transport for medicines including radioisotopes in the case of no deal.[181] An article in the Pharmaceutical Journal quotes Layla McCay, director of international relations at the NHS confederation as saying the new express freight plans where [medicines are] tracked all the way" would be "more reliable".[182]

In a letter to Prime Minister Johnson on 1 August 2019, three groups who procure and use radioisotopes (the Royal College of Radiologists, the British Nuclear Medicine Society, and the UK Radiopharmacy Group) said they were "encouraged" by the work being undertaken on radioisotopes, but continued that they "remain[ed] apprehensive" about supplier readiness and the impact of supply changes on patients. They asked the Prime Minister for clarity on three issues: custom delays at airports, the need for qualified drivers, and what action would be taken to address the "increased costs caused by Brexit".[183]

- **Research:** In the event of no-deal, the UK Government issued guidance (now withdrawn) on nuclear research after Brexit, which stated:

  The UK will leave Euratom (the European Atomic Energy Community) and will no longer be:

  - a member of the Euratom Research & Training (R&T) programme
  - a member of Fusion for Energy
  - able to collaborate on the International Thermonuclear Experimental Reactor (ITER) project through the EU[184]

In relation to a no deal scenario, the Government's Nuclear research after Brexit guidance stated on ITER:

> The UK will no longer be a member of Fusion for Energy and UK businesses will not be able to bid for International Thermonuclear Experimental Reactor (ITER) contracts through Fusion for Energy.
>
> However, the UK government is exploring alternative options to maintain UK participation in ITER.[185]

6.2 Energy trading and the IEM

Before the UK's departure from the EU, the Government published a number of technical notices on how to prepare for Brexit if there was

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180 Caroline Wickware, Plans for importing medical isotopes changed after government review of no-deal Brexit proposals, *The Pharmaceutical Journal,* 13 August 2019
181 Department for Health and Social Care, New Service to deliver urgent medicines and medical products in the UK, 15 August 2019
182 Caroline Wickware, Plans for importing medical isotopes changed after government review of no-deal Brexit proposals, *The Pharmaceutical Journal,* 13 August 2019
183 Royal College of Radiologists, Prime Minister urged to clarify queries on radioisotope transport and costs, 1 August 2019
184 Gov.uk, Nuclear research after Brexit, 13 August 2019
185 Gov.uk, Nuclear research after Brexit, 13 August 2019

no deal (since withdrawn).[186] The guidance on trading gas and electricity stated the UK would leave the IEM in the event of no deal:

> European energy law will no longer apply to the UK and the UK's electricity markets will be decoupled from the Internal Energy Market.[187]

The gas guidance also stated the EU law would no longer apply. The implications for electricity trading were that new agreements would need to be developed:

> Cross-border flows across electricity interconnectors will no longer be governed by EU legislation which provides for efficient trade and cross-border cooperation in operating the electricity system. Without these arrangements, alternative trading arrangements will need to be developed. Regulators in the UK and EU will need to ensure that new access rules, which set the terms and conditions for this trade, are in place.[188]

The guidance set out a number of actions that would need to be taken, such as market participants registering with EU regulators, changes to domestic industry codes and licences, and also stated that the Government had published statutory instruments, to come into effect on exit day in the event of no deal, to ensure energy laws continued to work. Similar requirements were laid out in the gas trading guidance.

6.3 The island of Ireland

The SEM is based on a bilateral co-operation agreement between UK and Irish Governments, rather than on EU legislation. If the UK were to leave the IEM as a result of no deal, trading across the SEM was expected to be able to continue. However due to the fact the island of Ireland's only physical connections with the IEM are through GB, trading between the SEM and IEM was expected to be uncoupled. Decoupling can lead to reduced efficiency as Box 1 explains, potentially leading to more expensive imports and higher energy bills for customers across the island of Ireland.

The SEM committee, the decision-making committee for the market, published a technical note on 28 March 2019, explaining the differences in trading in the event of no-deal:

> This all-island trade will continue in the event of a 'no deal' Brexit. Trade between the all-island market and Great Britain, through the interconnectors, will continue although this trade may be less efficient, as some platforms operated under EU rules may not be used in the same way as today.
>
> In the SEM, generators and suppliers can trade electricity in a number of timeframes. Electricity can be traded the day before it is expected to be used (known as the Single Day Ahead Coupling - SDAC) and can be traded on the day itself (known as the Intraday Markets). Currently the SDAC operates as part of a pan-European market, with the SEM connected through Great Britain. Electricity is traded across almost all the EU Member States

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186 Gov.uk, UK government's preparations for a no deal scenario, last updated 23 August 2018
187 Gov.uk, Trading electricity if there's no Brexit deal, updated 25 March 2019
188 Gov.uk, Trading electricity if there's no Brexit deal, updated 25 March 2019

> simultaneously in this market. For the Intraday Market electricity is traded at a regional level between SEM and Great Britain.
>
> In the event of a 'no deal' Brexit, Great Britain will no longer be part of the pan-EU Day Ahead Market which will impact on the SEM's ability to connect with the pan-EU market. In this situation, the SEM will continue to operate as an isolated, all-island market within the SDAC but with no connection between the SEM, GB and the wider EU market.[189]

However the Government's no deal guidance on Electricity Trading covered the issues for the SEM in the event of no deal, including the possibility that "the SEM cannot be maintained":

> EU rules will cease to apply in Northern Ireland, leaving key elements of the Single Electricity Market without any legal basis. In the event of a no-deal, there will be implications for trade between Great Britain and the Single Electricity Market through interconnectors. […]
>
> Given the benefits to consumers and the economy of the more efficient, shared market, it is strongly in the interests of all parties to agree to a means to avoid the split of the market. Recognising this, the government will therefore take all possible measures to maintain the Single Electricity Market. The government will continue to work with the Irish Government and European Commission to seek agreement that the Single Electricity Market will continue.
>
> However, if such an agreement cannot be reached, there is a risk that the Single Electricity Market will be unable to continue, and the Northern Ireland market would become separated from that of Ireland. Separate Ireland and Northern Ireland markets will be less efficient, with potential effects for producers and consumers on both sides of the border.
>
> If this situation arises, government, the Northern Ireland Utility Regulator and SONI, the Northern Ireland Transmission System Operator, will take action to mitigate the risks in Northern Ireland. Contingency planning work is considering how best to transition to new arrangements if the Single Electricity Market cannot be maintained.[190]

On 23 October 2018, during an evidence session for the House of Lords Energy and Environment Sub Committee, the then Minister Claire Perry MP and Jonathon Holyoak (Director for EU Energy and Climate Change at BEIS) were asked about no deal planning for Northern Ireland:

> **Lord Rooker:** Is your department responsible for making sure that, in Northern Ireland, portable generators are available in case things go wrong, or is it some other department? Are the generators being manufactured in the UK?
>
> ***Claire Perry:*** This is worst-case contingency planning.
>
> ***Jonathan Holyoak*:** In almost all the bad-case scenarios, the Utility Regulator in Northern Ireland will talk to the companies about ensuring that capacity is available. With us on the GB side, it will make sure that the interconnector between Scotland and

189 SEM Committee, Notice to Industry in the event of a 'no deal' Brexit, 28 March 2019
190 Gov.uk, Trading electricity if there's no Brexit deal, 25 March 2019

> Northern Ireland works efficiently to secure Northern Irish supply as well.
>
> ***Claire Perry:*** To reassure you, there are conversations on that and other points, on an incredibly open-book basis, between my department and the Northern Ireland Office. It is a shame that we do not have a functioning Executive, but there are plenty of people on the ground who are very keen to help us not get to that scenario.[191]

Both the Irish and UK Governments passed legislation in preparation for no deal. The Irish Government's *Withdrawal of the United Kingdom from the European Union (Consequential Provisions) Act 2019* was an omnibus Act which included provisions to protect electricity trading. The changes allow the Commission for Regulation of Utilities (CRU) to quickly modify (on a temporary basis) licences of Irish-based SEM participants in the event of no deal.

The UK Government, under the powers of the *European Union (Withdrawal) Act 2018*, made several Statutory Instruments in order to "remove inoperabilities"[192] relating to EU exit in relation to the SEM in a no deal scenario.

However, the British Irish Chamber of Commerce and the trade body Energy UK, who held roundtables on the UK-Ireland energy relationship, warned that this legislation did not remove all risks for the SEM:

> It was agreed that this legislation, although welcome, should not be considered a panacea for the SEM in the event of a 'No Deal' Brexit. While the Irish Government does have some reserved competences in Energy policy, the majority of energy and climate legislation is derived from the EU under the auspices of the Internal Energy Market (IEM).[193]

6.4 Other energy

Guarantees of Origin

Guarantees of Origin (GOOs) are certificates used to track and account for electricity generated by renewable energy sources or to identify the origin of generated electricity from combined heat and power (CHP). They are issued in Member States and recognised EU wide.[194]

In the case of a no deal Brexit, UK guidance said the UK would continue to accept EU GOOs, but that UK GOOs would no longer be valid in the EU which may have impacted trading:

> In a 'no deal' scenario, the government will ensure that Great Britain will continue to recognise Guarantees of Origin issued in Northern Ireland and EU countries. This will allow electricity suppliers in Great Britain to continue to use EU and Northern

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191 House of Lords Select Committee on the European Union, Energy and Environment Sub-Committee, Uncorrected oral evidence: No deal preparations: energy and environment, 23 October 2018, Q37

192 Gov.uk, The Electricity and Gas etc. (Amendent etc.) (EU Exit) Regulations 2019, 17 December 2018

193 British Irish Chamber of Commerce and Energy UK, Discussion Paper on 'The impact of Brexit on the Single Electricity Market (SEM) and the Future of the Internal Energy Market (IEM) [accessed 5 September 2019]

194 The power to issue Guarantee of Origin certificates is devolved to Northern Ireland.

> Ireland Guarantees of Origin to comply with their fuel mix disclosure obligations and ensure that existing supply contracts are not compromised, in so far as these contracts depend upon Guarantee of Origin.
>
> […]
>
> Guarantees of Origin from combined heat and power [and for renewable energy] issued in Great Britain and Northern Ireland will no longer be recognised in the EU. This will mean that existing contracts with EU countries' electricity suppliers or traders may be compromised if the contract terms require the transfer of a Guarantee of Origin recognised by the EU.[195]

On 23 October 2018, during an evidence session for the House of Lords Energy and Environment sub-committee, the then Minister for Energy and Clean Growth Claire Perry said there was likely to be little impact on CHP generators, but did not mention renewable generators:

> To date, no UK-based CHP generators have applied for those EU-issued CHP Guarantees of Origin, so we do not expect any electricity trade to be affected under a 'no deal' scenario.[196]

Energy efficiency

Energy efficiency regulations limit the amount of energy that products consume which can reduce costs for consumers and reduce energy-related emissions. Before the referendum, there were press reports that supported the case to leave the EU, as it would allow the UK to remove EU energy efficiency laws on household items such as hoovers and lightbulbs.[197]

The Government's domestic policy, before Brexit and at present, has been to keep costs down for consumers, and also to meet emissions targets (see sections below). The Government's no deal guidance on 'Meeting climate change requirements if there's no Brexit deal' stated that these regulations would continue to be met:

> For Ecodesign and energy labelling regulations which entered into force and applied before 29 March 2019, regulatory alignment was maintained by bringing relevant EU regulations into domestic law.
>
> Following the extension of Article 50 and the UK's new departure date of 31 October, further legislation is being prepared to ensure any new EU laws that have come into force between 29 March and 31 October continue to function in the UK after Brexit.
>
> After the point of Brexit, the UK will keep step with equivalent standards wherever possible and appropriate, or even exceed them where it is in the UK's interest to do so.[198]

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195 Gov.uk, Generating low-carbon electricity if there's no Brexit deal, 24 September 2018

196 House of Lords Select Committee on the European Union, Energy and Environment Sub-Committee, Uncorrected oral evidence: No deal preparations: energy and environment, 23 October 2018, Q31

197 20 reasons you should vote to leave the European Union, The Telegraph, 22 June 2016

198 Gov.uk, Meeting climate change requirements if there's no Brexit deal, 29 July 2019

6.5 Climate change

In preparation for a possible no deal scenario at the time, the then Government published a technical notice on *Meeting climate change requirements if there's no Brexit deal* on 12 October 2018[199] which focused on the EU Emissions Trading Scheme, the consolidated system of European Registries (of emissions units), and the geological storage of carbon dioxide. The European Commission also issued a number of Notices to Stakeholders on climate action, including on the "*Withdrawal of the UK and the EU Emissions Trading System*" and "*Fluorinated gases*" on 19 December 2018. The Library Briefing on EU Preparations for a no-deal Brexit (30 June 2019) provides further background.

Kyoto Protocol

In a no deal scenario, the European Commission stated that accounts administered by the UK in the EU ETS Registry and the UK's Kyoto Protocol National Registry would have been inaccessible. With regard to the Kyoto Protocol National Registry, the Government stated that its "preferred solution" was to retain access to the Consolidated System of European Registries but that this could not be guaranteed. The Government said that it was exploring options including retaining access to the existing Kyoto Protocol registry and the procurement of an alternative registry system with a view to establishing a new system by early 2021. It conceded that if access could not be retained in the event of a no deal scenario, there was "likely to be a gap in service".[200]

Carbon pricing: EU ETS and a carbon tax

The Government's guidance on meeting climate change requirements if there's no Brexit deal (now archived) stated that it was "discussing with the Commission the implication of our exit from the EU on the EU ETS".

In relation to the EU ETS, the Government confirmed that it would remove requirements relating to the surrender of EUAs in a no deal scenario, but that it intended to maintain the monitoring, reporting and verification (MRV) arrangements.[201] In evidence to the House of Lords EU Energy and Environment Sub-Committee, the then Energy Minister referred to this outcome as "a mirror system linked to the ETS".[202]

To accomplish this, the Government laid the *Greenhouse Gas Emissions Trading Scheme (Amendment) (EU Exit) Regulations 2019* on 25 January 2019 to maintain the MRV elements of the scheme in the UK, and to amend the other elements of retained EU law to reflect the fact that the UK would no longer be part of the EU ETS and to ensure that the

199 Gov.uk, Meeting climate change requirements if there's no Brexit deal, 12 October 2018 [archived]

200 Gov.uk, Meeting climate change requirements if there's no Brexit deal, updated 29 July 2019 [archived]

201 Gov.uk, Meeting climate change requirements if there's no Brexit deal, 12 October 2018 [archived]

202 House of Lords Select Committee on the European Union, Energy and Environment Sub-Committee, Uncorrected oral evidence: No deal preparations: energy and environment, 23 October 2018, Q25

retained law operated effectively in a domestic no deal scenario. Further Regulations were laid in April 2019 to update and amend the MRV elements to reflect changes in EU law.[203] Further information is available in the accompanying explanatory memorandum.

A no deal scenario would have had practical consequences for the overall EU ETS market and both EU and UK participants as the UK would have left the EU ETS part way through a trading phase (Phase 3). Participants who were UK operators of installations would have no longer been part of the EU ETS and flights within the UK and between the UK and the EU would not have been covered by the scheme. There would have been no requirement for UK operators to surrender EU allowances to comply with the EU ETS. In the short term, these operators would have moved to a UK carbon tax regime, with the monitoring, reporting and verification elements of the EU ETS retained.

In December 2018, the European Commission confirmed that as of exit day in a no deal scenario:

> No more auctions by the United Kingdom, no more allocation of free allowances to the accounts administered by the United Kingdom can take place and no exchanges of international credits can be performed by installation and aircraft operators administered by the UK.[204]

As part of its contingency measures, the European Commission suspended these processes from 1 January 2019 until the day after ratification instruments concerning the Withdrawal Agreement were deposited. This suspension notification prevented the UK Government from issuing any 2019 allowances unless and until the suspension was lifted (i.e. until a deal was agreed and formally approved). In a no deal scenario, the suspension would have remained. Furthermore, the European Commission's Notice to Stakeholders confirmed that the UK would no longer have been able to administer accounts in the EU ETS Union Registry.

Prior to this, in contemplation of a then potential 29 March 2019 exit day, both the EU and the UK took action to ensure that 2018 UK allowances retained their value but did not completely flood the market should the UK have left with no deal at the end of March 2019 (see Box 5). In this case, as Article 50 was extended, these measures were not needed, and all 2018 UK allowances were valid for EU ETS compliance and indistinguishable from allowances issued by other EU member states.

Box 5: 2018 EUAs – planning for a 29 March 2019 no deal Brexit

As Article 50 was extended, these measures were not needed, and all 2018 UK allowances were valid for EU ETS compliance and indistinguishable from allowances issued by other EU member states. This information is included for background information only.

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203 *Greenhouse Gas Emissions Trading Scheme (Amendment) (EU Exit) (No.2) Regulations 2019*.

204 European Commission Notice to Stakeholders, Withdrawal of the UK and the EU ETS, 19 December 2018 [accessed 23 August 2019]

If the UK had left the EU ETS on exit day (then expected to be 29 March 2019), a key risk identified during 2017 was that UK participants could flood the market with a mass sell-off of EU Allowances which would result in a big crash in the price of carbon. In October 2017, the International Emissions Trading Association (IETA) was reported to explain that:

> A hard Brexit scenario poses a risk of approximately 220 million allowances issued by the United Kingdom to be offloaded onto the market between 1 January 2018 and 29 March 2019.[205]

To safeguard against this, both the EU and the UK amended legislation[206] aiming to avoid a mismatch between the functioning of the EU ETS compliance timing (April 2019 for 2018 EUAs) and the timing of exit day (then March 2019). The purpose of the amendments was to ensure that 2018 UK allowances retained their value while also ensuring that they did not flood the market upon exit of the UK from the EU.

The EU amended the *EU ETS Registry Regulation* to provide for marking and restricting the use of allowances issued by the UK from 1 January 2018 i.e. automatically voiding any such UK allowances and thus avoiding a flooding of the market. However, the amended Regulation provided that any EUAs for 2018 would *not* be voided in the following circumstances:

- if EU law does not cease to apply in the UK by 30 April 2019; or
- where it is sufficiently ensured that the surrender of allowances must take place by no later than 15 March 2019 in a legally enforceable manner.[207]

The UK Government laid the *Greenhouse Gas Emissions Trading Scheme (Amendment) Regulations 2017* in December 2017 to ensure UK-issued ETS allowances would keep their value. The regulations changed the EU ETS compliance deadline for 2018 emissions so that UK allowances will be validated and surrendered before 15 March 2019, and so (as per bullet point 2 above) UK-issued 2018 ETS allowances would keep their value and not be voided as a result of Brexit.

The resulting situation is explained further by the European Commission as follows:

> The revised Regulation provides for marking and restricting the use of allowances issued by the United Kingdom as of 1 January 2018, unless Union law would not cease to apply in the United Kingdom by 30 April 2019 or it is sufficiently ensured that the surrender of allowances takes place in a legally enforceable manner by no later than 15 March 2019.
>
> Since the United Kingdom had informed the Committee of the adoption of a law on 27 December 2017 by which the compliance deadline for 2018 emissions has been advanced to 15 March 2019, allowances issued by the United Kingdom for the calendar year 2018 are however not marked and are accepted for surrender.[208]

A UK-wide carbon tax

The Government first published a technical notice on *Meeting climate change requirements if there's no Brexit deal* on 12 October 2018, to set out arrangements for carbon pricing in the event that the UK had left the EU on 31 October 2019 without a deal.[209]

The Government planned that, in a no deal scenario, the UK would have initially met its existing carbon pricing commitments via the tax system.[210] Following the extension of Article 50, the commencement

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205 Reuters, EU measures to safeguard carbon market from Brexit, Julia Fioretti, 18 October 2017 [accessed 9 August 2018]

206 The EU amended the EU ETS Registry Regulation; the UK amended the *Greenhouse Gas Emissions Trading Scheme Regulations 2012* by passing the *Greenhouse Gas Emissions Trading Scheme (Amendment) Regulations 2017*

207 European Commission, Commission Regulation amending Commission Regulation No 389/2013 of 2 May 2013, Article 1

208 European Commission press release: *Update on safeguard measures for EU ETS* (13 February 2018)

209 Gov.uk Carbon Emissions Tax technical note, 3 September 2019 [accessed 5 September 2019]

210 Gov.uk, Meeting climate change requirements if there's no Brexit deal, 12 October 2018 [accessed 8 November 2018]

date for the UK carbon emissions tax was amended from 15 April 2019 to 4 November 2019.[211] The tax would not have applied to the aviation sector.

At Budget 2018, a UK-wide carbon emissions tax rate of £16/tCO_2 was announced which would have applied to EU ETS sectors for emissions over and above an installation's allowance (based on the EU ETS free allowance) in the event of such a no deal scenario:

> 3.51 Carbon pricing following EU exit – The government continues to plan for all scenarios as it prepares for EU exit. In the unlikely event no mutually satisfactory agreement can be reached and the UK departs from the EU ETS in 2019, the government would introduce a Carbon Emissions Tax to help meet the UK's legally binding carbon reduction commitments under the Climate Change Act. The tax would apply to all stationary installations currently participating in the EU ETS from 1 April 2019. A rate of £16 would apply to each tonne of carbon dioxide emitted over and above an installation's emissions allowance, which would be based on the installation's free allowances under the EU ETS. The government is also legislating so it can prepare for a range of long-term carbon pricing options.[212]

This rate was broadly in line with the EU ETS pricing at that time, although the EUA price rose to over EUR 28 in July 2019.[213] The rate for 2019 was reconfirmed at £16 per tonne by the Government in September 2019.[214] Further information on this proposal is available in the Government policy paper on the Carbon Emissions Tax which was published alongside Budget 2018.

The *Finance Act 2019* (Part 3) contains provisions to implement the carbon emissions tax, to be brought into force in the event of a no deal scenario only. Following the extension of Article 50, these provisions were not brought into force and the carbon emissions tax was not commenced.

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211 Gov.uk, Meeting climate change requirements if there's no Brexit deal, updated 29 July 2019 [accessed 29 July 2019]
212 HM Treasury, Budget 2018, HC 1629, October 2018
213 EUAs were at EUR 16 on 31 October 2018 and EUR 28.99 on 26 July 2019 according to ICE EUA futures via Sandbag and Quandl.
214 Gov.uk Carbon Emissions Tax technical note, 3 September 2019 [accessed 5 September 2019]

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