Energy supply and decarbonisation beyond Brexit Britain: politics and policy

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Energy supply and decarbonisation in post-Brexit Britain: Politics and policy

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1. Introduction

There will be no long-term sustainable future for capitalism in the 21st century unless climate change can be limited. For a country like Britain, this means completely decarbonising the economy by the second half of the century, if not before. Britain’s path towards a low-carbon economy has been significantly shaped by membership of the EU, especially through legislation and regulations affecting the energy sector, so Brexit raises important questions about whether and how that path will continue in the future.

At the same time, Brexit also poses some immediate and direct challenges for the security and costs of energy supply. This is because over the last 25 years the UK energy system itself has become intertwined with that of EU member states, through the development of the Internal Energy Market and the associated infrastructure. The UK is increasingly dependent on energy imports, many of which come from or pass through the EU. The EU has sought to increase its energy security, both through solidarity mechanisms between member states, and by forging better relationships with suppliers and transit countries. Leaving the EU therefore raises serious questions about the security and costs of Britain’s future energy supplies.

Moreover, Brexit is happening at a time of significant flux in energy systems around the world. After 30 years of free markets (at least in theory), state intervention and even re-nationalisation are increasingly back on the agenda. Even more fundamentally, new technology in electricity, coupled with developments in ICT and data handling, is leading to a rapid decentralisation of energy systems, disrupting established industry players and giving new roles to consumers.

In what follows, we outline the key issues for energy and climate policy in a post-Brexit Britain. The next section looks at the potential impacts of different Brexit scenarios on energy supply, with a focus on costs and security. In section 3 we consider how domestic political support for decarbonising energy may be affected by Brexit, and some of the low-carbon policy issues raised by separating from the EU. Section 4 looks at post-Brexit Britain in the light of long term technological and ownership trends in the energy sector. Our energy future could end up looking a lot more
isolationist than it does now, or we could remain fairly integrated with the EU. Both futures are feasible, but differ significantly in the challenges they pose and opportunities they offer.

2. Energy supply after Brexit

The UK’s energy policy and system have become increasingly integrated with the EU in recent decades, through regulatory harmonisation, common policy frameworks and infrastructure. But there has been little discussion of energy supply or its environmental impact within Brexit debates, except in the broadest terms. The July 2018 White Paper did not clarify the UK Government’s ambitions for the future relationship in this area.

Effects of Brexit on energy supply will come via two routes: direct and indirect. Indirect effects work through routes outside energy policy and regulation. One of these is the impact of currency shocks or depreciation, leading to increases in the costs of fuels and imported inputs to supply chains. Another is potential disruption to supply chains as the UK leaves the Customs Union or the Single Market or both. There is also the possible effect of loss of access to skilled labour; for example Oil and Gas UK estimate that around five per cent of the workforce in the North Sea is from EU countries. More generally, uncertainty linked to Brexit has cast a pall over investment decisions in the whole sector.2

The direct effects will come as a result of whether or not the UK stays in the Internal Energy Market (IEM). The IEM has developed over a number of decades through increasing European oversight and in areas such as market rules and environmental protection, legislative control of policy and regulation in the energy sectors of Member States. Thus the IEM is not about tariffs but rather about a set of shared policies and rules and, more recently, participation in a linked automated network of trading platforms.

The issues involved in leaving the IEM differ across gas, electricity and oil. Oil is globally traded, so the effects of Brexit can be expected to be fairly minor. By contrast trade in gas and electricity, being largely or entirely networked through pipes and wires, is much more regional in nature. In the short term, the implications for gas security of supply are more important, but in the medium term it will be electricity that matters more, as we are likely to switch over to using electricity for cars and at least partially for heat as well, in order to decarbonise the economy.

Gas trade with European countries from outside the IEM is entirely possible (as the example of Russia shows). The UK is well connected physically to the Continent, and with both North Sea fields and the largest liquefied natural gas (LNG) infrastructure in Europe, it is a useful trading partner. The main concerns are therefore less about trade per se and more about security of supply and price stability at times of peak demand, when we become more dependent on imported gas.

When the UK joined the then European Economic Community in 1973 it was poised to enter the North Sea oil and gas boom period (Figure 1). By contrast, it leaves as its energy import dependency has re-emerged, with domestic production of gas and oil expected to continue to decline. The UK is highly dependent on Norway for winter imports, which might become a problem if there were a situation in which the UK had to compete for Norwegian gas with the remaining EU Member States, as Norway, being a European Economic Area state, is more closely aligned with the latter. This situation, and resulting price volatility, may make a post-Brexit Britain seek other options, including more LNG and strategic gas storage which could cost in the order of a £100m a year.3

Figure 1
UK net energy import dependency, 1970-2016
For electricity, the present trade (which tends to run from the Continent to Britain) could in principle continue. But experience from Switzerland suggests that the EU increasingly sees electricity in terms of participation in a system with common rules and interlinked trading platforms. The latter have developed in the last two years into a ‘market coupling’ system that has reduced transactions costs and led to more efficient allocation of interconnector capacity. Exiting this system as part of the IEM would mean a loss of economic benefits, as prices are likely to rise. Estimates of what is potentially at stake are of the order of €100 million a year. However, the market coupling system is expected to evolve to allow shared electricity system balancing services (i.e. matching supply and demand in real-time), access to which would be worth a lot more, potentially of the order of several billion pounds a year. The balancing service offered by interconnectors will be of increased value as the share of wind and solar and other variable renewables increases. Any resulting rise in final energy prices is likely to sharpen the politics of energy affordability and the costs of decarbonisation.

There are, therefore, good security and economic reasons for remaining within the IEM. However, doing so whilst leaving the EU would also come with some ‘sovereignty costs’. These would include having to accept future EU energy legislation and regulation without having a formal say in their development, and the jurisdiction of, if not the European Court of Justice, then some other arbitration mechanism acceptable to the EU-27. This loss of influence would be considerable, as the UK has historically been a strong voice in the development of an integrated European energy system.

Before leaving energy supply issues, it is worth briefly considering two other special problems. One is the Single Electricity Market (SEM), a common integrated electricity market and system across Northern Ireland and the Republic of Ireland which has been in place since 2007. The SEM involves shared regulation and major investments going into increased interconnection between the two. There are a number of possible post-Brexit arrangements, somewhat mirroring those arising from the wider Irish border problem. Maintaining the SEM has been recognised as a priority by all
negotiating parties, and the UK Government has reaffirmed its commitment to maintaining the SEM in the July 2018 White Paper, but finding a solution will be politically delicate.

The other special problem is ‘Brexatom’ (British withdrawal from the Euratom Treaty). For more than 60 years the Treaty has shaped the UK’s domestic nuclear legislation, including standards and rules on nuclear safety and non-proliferation, health and safety and nuclear waste management. Of greatest concern is the non-proliferation of nuclear material. Currently, this is overseen by Euratom safeguards inspectors on behalf of the international community. Outside of Euratom inspections will need to be carried out by the UK’s Office for Nuclear Regulation (ONR), directly reporting to the International Atomic Energy Agency. The ONR accepts that it will not be possible to have capacity in place by March 2019 to inspect the same number of facilities as under Euratom, although it says that it will meet international standards. In addition, the UK will need to negotiate and ratify new bilateral agreements for supply of nuclear material and equipment, in particular with Australia, Canada, Japan, and the United States before the UK leaves the EU, or if there is one, at the end of the transition period. All of this is possible, but will take additional resources for the ONR and time is pressing.

3. Decarbonisation after Brexit

Post-Brexit, concerns about energy security, affordability and competitiveness are likely to rise up the agenda, which raises the question of whether the low carbon agenda survives. A common view is that it will, because the two key frameworks setting the UK’s ambition on climate policy - the 2008 Climate Change Act and the 2016 UNFCCC Paris Agreement - are not dependent on the EU.

Brexit is likely to require the UK to adopt its own Nationally Defined Contribution under the Paris Agreement, but this is a relatively minor technical change. More important is the argument that the UK will lose influence because it will no longer be part of the EU bloc, but rather just one country with around one per cent of global carbon emissions. Moreover, with the loss of UK advocacy internally, there is a risk that the EU will be a weaker ally in the international arena. However, at present both the UK and the EU have signalled a desire to continue working closely together at the international level.

At the same time, the 2008 Climate Change Act (CCA) commits the UK to emissions reductions targets that are more ambitious than those of the EU. However, a significant part of expected UK emissions reduction to 2030 – the Committee on Climate Change (CCC) puts it at fifty per cent – is through areas covered by EU legislation and regulation, such as energy efficiency and vehicle emissions standards. These frameworks should be incorporated into UK law through the Great Repeal Act, but they have been flagged as delivery risks by the CCC and there are concerns that without the EU to enforce them there will be a governance gap.

In practice, both the UK’s efforts in international climate leadership and the future efficacy of the CCA depend in large part on the domestic politics of climate change policy. There is broad support for action on climate change in the UK, but the issue is of low salience to most voters, so that support is not deep. The CCA does benefit from strong support from business, both in the energy sector and more generally; for example, in April 2018, 21 major energy firms and other businesses called on the UK government and the EU to continue to work closely towards meeting the goals of the Paris Agreement. Nevertheless, two fears remain.
One is that if there is a deep economic shock on leaving the EU, public support for climate policy will be overwhelmed by concerns about costs. It is already the case that policy costs associated with carbon reduction, especially on electricity bills, are set to grow to 2020.

A second fear is of hostile attack on climate change policy and science from a resurgent right-wing populism. Surveys show that Leave voters tend to be more sceptical of climate science than the general population, and while UKIP as an organised force has dissipated, its supporters and voters are still around. One would expect their presence to be felt especially within the Conservative party. But yet it is far from clear that the current party leadership is tacking to the right on climate change. While there has been significant dismantling of policy, for example on support for solar PV and onshore wind, and scrapping the zero-carbon homes standard, there have also been some pro-active steps, such as a suggested phase-out of conventional diesel and petrol cars by 2040 and an instruction to the Committee on Climate Change to look at the implications of increasing ambition on the UK’s 2050 target. It is hard to think this approach is not at least in part a political strategy from a Conservative Government aimed at appealing to younger voters, who are both more concerned about climate change and more likely to vote Labour. While the Conservatives need to appeal more to such voters, the party is in a brittle and unstable state, and a stronger shift towards right wing populism is a significant possibility, as is some successor to, or resurgence of, UKIP. Such developments would be a major threat to the decarbonisation agenda, and could see the weakening, if not the repeal of the 2008 CCA.

If commitment on climate change action remains strong, what are the post-Brexit policy issues? One is how to price carbon emissions. The EU’s Emissions Trading System (ETS) has been a centrepiece of Europe-wide climate policy since 2005. The UK Government wants to stay in the scheme until 2020, but it is not clear what the desired relationship will be beyond this. The ETS has been largely ineffective because of lobbying, and a domestic emissions trading scheme might be an opportunity for a better design, but it would have a smaller trading pool, and the practicalities of setting up a new scheme could take several years. The simplest option would be to build on the current UK carbon floor price policy by bringing in a carbon tax. However, the effectiveness of a tax will depend on the level at which it is set, and this in turn will be determined by the political considerations discussed above.

A second issue is support to low carbon technologies, at present mainly in electricity generation. Renewables are most vulnerable, as historically UK governments have been lukewarm towards such technologies, and policy has really been driven from the EU via the Renewables Directives. The exception here is offshore wind, which has now reached a critical mass where it is producing such employment, investment and potential export benefits that it has won government backing. Looking beyond 2020, a post-Brexit Britain would have to be extremely isolationist to resist the global trend towards cheaper renewables. Investment will depend on market design, which needs reform, and planning rules. Recent UK governments have been keen on new nuclear power, but here there are potential headwinds post-Brexit. Nuclear remains less popular with the public than renewable energy and it currently looks expensive, as noted in the 2018 National Infrastructure Assessment.

A third issue is the loss of low-carbon investment support. The UK received around £2.5 billion a year in energy loans and grants from the EU, including infrastructure finance, regional development funding and grants for R & D. The most significant loss would be reduced or even loss of funding from the European Investment Bank (EIB), as nearly thirty per cent of loans to the UK have supported energy infrastructure, amounting to over £8 billion in the past five years,levering in investment from others. Ninety per cent of EIB investment goes to Member States, so outside of the EU it will be more difficult for the UK to access loans, and a replacement will be needed.
4. Brexit and longer-term trends in the energy system

In addition to decarbonisation, the UK energy system is evolving in a number of other ways. One relates to ownership and markets. When the UK joined the EEC in 1973, energy industries were state-owned monopolies. This situation was transformed by the liberalisation revolution of the 1980s and 1990s. However, this Thatcherite project was barely complete when a slow drift back towards state intervention began from the early 2000s onwards. The retreat from free markets was initially linked to decarbonisation goals, but as energy prices rose sharply in the latter part of the decade, scepticism about the true extent of competition in retail markets also came to the fore, leading to price controls. Labour under Jeremy Corbyn has gone further, calling for a return to public ownership in the energy sector in the 2017 election.

Public ownership is allowed within the current rules of the IEM, as long as networks, generation and supply are not owned within the same part of the state. Indeed, ironically, many of the companies active in British markets have parents in other EU Member States that are state owned; not just four of the ‘Big 6’ energy utilities, but also major players in offshore wind and new nuclear developments. In a post-Brexit Britain that foreign ownership might come under scrutiny. However, it is worth noting that the parts of the energy sector specifically targeted by Labour for renationalisation are gas and electricity networks owned mainly by companies and banks in Asia, Australia and North America. Public ownership in energy is a post-Brexit approach to ‘taking back control’ that offers an alternative to sovereignty and ethno-nationalist narratives. But a return to the statism of the 1970s is not feasible; the challenge will be how to make public ownership work for a 21st century energy system that is undergoing major technological and institutional change.

A second trend is in the devolution of policy making. Historically, British energy policy has been set centrally, and markets and networks have operated within GB-wide regulatory frameworks. This unitary approach changed with devolution in the late 1990s. Energy policy is somewhat of a grey area in devolution: Whitehall has retained control of the key legal frameworks and financial resources, but there are important differences between the nations and regions. Energy policy, regulation and markets in Northern Ireland are now largely run separately from the rest of the UK, except for nuclear power. At the other end of the spectrum, Wales has only a few devolved powers, in areas such as energy efficiency and fuel poverty. Scotland is in an intermediate position, having a degree of control over policy which it has used to mark out a somewhat distinctive position.

Some have argued that Brexit, through the transfer of powers directly from Brussels to devolved administrations, might provide an opportunity for a ‘race to the top’, for example on climate ambition. However, it is not clear that Brexit is needed for this to happen. For example, the Scottish Government is currently consulting on a Climate Change Bill that would have a greater emissions reduction target than the 2008 Climate Change Act. It has opposed hydraulic fracturing (‘fracking’) for shale oil and gas, ruled out any new nuclear plants in Scotland and is actively promoting district heating, all policies that set it apart from the UK’s central government. Scotland also has some control over renewables policy, and greater political support for wind power has led to more extensive deployment there, as well as greater community wind farm ownership. Barring a power grab from Whitehall, what would change with a hard Brexit would be the removal of the common EU framework for energy and climate policy, and the possibility that existing divergence between England, Wales and Scotland would intensify; mostly likely with Scotland pursuing more renewable energy while England going for more nuclear (possibly taking Wales along with it).
Ultimately, given the technical incompatibilities between these two approaches, we could see the development of two largely separate energy systems, reinforcing Scotland’s wider distinctiveness.

The third important trend is about the decentralisation of the electricity system itself. An architecture based solely on big power stations and one-way distribution networks is fast giving way to one with a large number of small-scale technologies, including wind and solar photovoltaics (PV), increasingly interconnected locally through smart communication and control systems. The distinctions between producers and consumers of electricity are breaking down, with a number of experiments in local electricity markets and peer-to-peer trading already underway in parts of Britain. Whereas the flexibility needed to keep the electricity system stable has historically been provided by coal and gas-fired power stations, it will increasingly come from the demand side in homes and businesses and through battery storage, the costs of which are falling rapidly. With growing uptake of electric cars and the trialling of ‘vehicle-to-grid’ technologies, the role of battery storage will grow.

These changes present a number of opportunities. One is that major investments in the upgrading of infrastructure across the country will be needed. Another is that, since energy decentralisation is an emerging global phenomenon, there are huge potential export markets with high-skilled jobs for those companies able to take a lead. However, the ability of the UK to access the EU part of that market will be influenced by the post-Brexit settlement, including trade in services. There are also potential regional development opportunities in the strategic deployment of R&D funding, which could offset some of the anticipated uneven impacts of Brexit. For example, under its industrial strategy, the government has invested £80m in electric vehicle battery research in the West Midlands. However, far more will need to be done, not least because the UK may lose access to a large share of EU low carbon R&D funding and will be no longer eligible for EU Structural and Regional funds.

There is also a possibility that Brexit might actually accelerate the pace of change. This is partly because under any scenario in which the UK is no longer in the Internal Energy Market (IEM), there will be less electricity interconnection, and as a result domestic low-carbon decentralised sources of flexibility will be at a greater premium. It may also be that leaving the IEM gives Britain more freedom to pursue policy and regulatory changes that might facilitate the use of decentralised energy resources; especially in types of local experimentation that is currently difficult under EU rules.\(^1\)

The decentralised energy revolution is proving disruptive for large energy utilities and network companies. It holds out the promise that communities and households could become far more engaged in the production and consumption of energy, more aware of the implications for climate change and able to ‘take back control’ from large utilities, which suffer low public trust. The agendas of ‘energy citizenship’ or ‘energy democracy’ are exciting, if sometimes vague. However, there are other competing visions for a decentralised system in which consumers delegate control to incumbent utilities seeking to carve out new roles for themselves in the emerging landscape, perhaps acting in partnership with online platform giants such as Amazon or Google, who will use algorithms to optimise the use of consumer resources around existing lifestyles, thereby eradicating the need to engage in any active sense. Which vision comes to dominate is clearly bound up with deeper questions of control and trust in digital capitalism.
5. Conclusions

Because gas and electricity are networked industries, a Brexit involving leaving the IEM will mean a more isolated and costly energy future for Britain (and Northern Ireland if the Irish SEM is broken up). We would potentially lose access to the efficient trading mechanisms of market coupling. Plans for expanded electricity interconnection with continental Europe are likely to slow or even contract. Immediate price rises for consumers would be relatively small, but the longer term opportunity cost of access to shared balancing services will be higher. Britain may have to build more LNG and gas storage facilities to offset greater price volatility, adding to costs. Loss of access to billions of pounds worth of EIB funding annually would also make investment costs higher, unless an equivalent domestic public investment bank is created.

Economic shocks and lower growth are very real prospects following a hard Brexit which, along with the possibility of an accompanying resurgence of right-wing populism, would represent a serious challenge to the current political consensus on decarbonisation. Alternatively, a swing to the left might possibly see a return to public ownership in energy. Further tensions may arise from different parts of the UK, especially Scotland as against England and Wales, developing their energy systems in divergent ways.

However, there are also major long term transformations going on in energy that are global in nature, and so profound that even a more inward looking post-Brexit Britain is likely to be affected by them. Key trends include the falling costs of renewable electricity and electricity storage technologies, and the digitisation of energy systems. As a result, regardless of domestic climate policy, in the longer term Britain’s energy system is likely to continue to decarbonise, decentralise and digitalise.

A heavier reliance on electricity and more variable-output power from wind and solar PV means that balancing the system will become more difficult but also more important. Expanded interconnection with Britain’s neighbours would play an important role, but in an isolationalist post-Brexit future we would need to fall back more heavily on domestic forms of flexibility. This constraint could potentially be turned into an opportunity, but only if access to global markets can be retained and expanded.

Finally, what Britain’s energy future will look like in terms of ownership and consumer engagement depends on which visions of society win out in post-Brexit politics. At the moment, different visions - a return to statism, maintaining the current corporate-owned approach, or a distributed community and citizen-led model – can to some degree be found across the major political parties. But the real debate about them remains lost amidst the all-consuming noise of Brexit.

Notes


