

The energy sector implications of Brexit

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Introduction

On June 23rd, the UK voted 51.9% to 48.1% to leave the European Union. While the referendum outcome was not legally binding, the broad political consensus that has since emerged across both Remain and Brexit camps has been that the will of the majority must be upheld. So while the UK leaving the EU could be considered inevitable, and has continued to be reinforced with the political mantra of 'Brexit means Brexit', it is not clear what this exit will look like. A recent speech by Theresa May did set out negotiating principles, including not seeking membership of the Single Market.¹ However, this will be a long negotiation with the 27 remaining Member States, with the UK facing at least 2 years of uncertainty regarding the outcome.

There are a number of Brexit outcomes that could be considered plausible, each reflecting differing priorities of negotiating parties, on issues of market access, and political and institutional sovereignty.

- **Brexit-Lite.** A Norway-style agreement, providing access to the single market, but remaining outside the EU. The large downside for the UK is the lack of policy influence while still contributing financially and complying with EU rules.

- **Brexit-Select.** Based on bilateralism, with different aspects of EU policy making negotiated on a case-by-case basis, akin to Switzerland. Such a deal is considered unlikely, due to it allowing for a piece meal approach.²
- **Brexit-Hard.** A new relationship is negotiated around a free trade agreement, akin to Canada.

In view of the above outcomes, this paper seeks to explore what the implications might be for energy and climate policy in the UK and the EU. We do this by taking stock of the analyses and think pieces published in recent months by a range of experts. We consider the following issues from both a UK and EU perspective – infrastructure investment, energy markets and interconnection, legislative uncertainty, and political influence.

While we focus on these sector-specific issues, it is worth noting that climate and energy policy will more broadly be impacted by the wider economic situation that prevails. In the recent Autumn Statement setting out the Government's taxation and spending plan, the Office for Budget Responsibility (OBR) projected a lower growth outlook in the short term, in view of the uncertainty around Brexit.³ In the longer term, growth will be contingent on how the UK economy reconfigures its position in Europe and globally, in terms of sectoral growth, industrial structure, and changing population. Such drivers will inevitably have an impact on the

¹ The government's negotiating objectives for exiting the EU: PM speech

<https://www.gov.uk/government/speeches/the-governments-negotiating-objectives-for-exiting-the-eu-pm-speech>

² Grubb and Tindale (2016)

³ OBR (2016)

energy consumed, and the resulting CO₂ emissions.⁴

Energy infrastructure investment

The UK electricity system is undergoing significant transition, with all of the existing coal and nuclear generation capacity set to close in the 2020s, and a shift towards a decarbonised system through increasing investment in renewables, and new nuclear. According to UK projections, generation from fossil fuels will drop from a 60% share in 2015 to around 13% in 2035.⁵ Coal, set to be phased out by 2025, and nuclear, with all current capacity likely closed by 2030, account for 48% of electricity supplied in 2015.⁶ As a result, large-scale investment is required in the electricity system infrastructure (generation and networks), with an estimated investment pipeline for the sector of over £140 billion, with over £40 billion by 2020/2021.⁷

A key risk to these system investments is the higher cost of financing arising from uncertainty. An analysis by Vivid Economics suggests 100s of millions of pounds in additional financing costs due to near term uncertainty, risking project delay and compromising system security.⁸ In addition to the increased cost of investment, there is potential for a loss of momentum in developing new renewable energy (RE) projects if foreseen to be outside of established framework provided by the RE Directive.⁹ There could also be implications for replacing the UK's nuclear capacity. The first major project in years, Hinkley C was approved by Government after the

referendum, with large investment from the French utility EDF and its Chinese partner CGN. Whether such companies provide the expertise and investment for similar future high profile projects remains uncertain.

UK energy projects may also lose access to the preferential loans from the European Investment Bank, which amounted to €1872m in 2015,¹⁰ and to funding and guarantees from the European Fund for Strategic Investments, which, for example, have been granted to the UK smart meters roll-out project. Finally, another financial-based risk is that any devaluation of Sterling would increase the costs for importing materials (and labour), thereby making energy infrastructure projects more expensive. This downside risk may be offset by increased foreign investment, as UK assets and companies become cheaper.¹¹

In the longer term, the imperative to build new capacity (to ensure reliable electricity supply) and push towards a decarbonised system should occur under any of the Brexit outcomes. However, the costs of doing so may be higher if the UK is unable to fully benefit from the Internal Energy Market (IEM), or deliver the interconnection projects currently foreseen, as described next.

Functioning of energy markets and interconnectors

Given the UK's pioneering efforts to liberalise energy markets, its status of large gas producer and highly liquid gas trading point and the increasing interconnectivity of its electricity transmission system to Ireland and continental Europe, the UK undoubtedly plays a central role in the functioning of the IEM, as well as in the design of its rules.

⁴ CCC (2016)

⁵ DECC (2016)

⁶ DUKES (2016)

⁷ Infrastructure and Projects Authority (2016)

⁸ Vivid Economics (2016)

⁹ Grubb and Tindale (2016)

¹⁰ EIB website, last accessed on 15 December 2015

¹¹ University of Exeter, UK Energy Research Centre, Chatham House (2016)

Given that the infrastructure will remain in place, cross-border trading of gas and electricity will undoubtedly continue irrespective of any Brexit scenario. Interconnectors will still be used to carry energy from low-priced to the high-priced bidding areas. However, the introduction of border tariffs for energy products or energy transmission services would alter trading activities between the UK and EU Member States. The higher these tariffs, the more the UK and the EU would forego the benefits of connecting diverse electricity mix structures and gas supply portfolios. However, the fact that electricity is traded freely between Russia – which is neither a member of the European Economic Area nor the European Free Trade Association – and Finland and the Baltic countries suggests that electricity border tariffs are unlikely to be applied post Brexit.¹²

Nonetheless, there is a chance that the EU network codes aimed at fostering the efficiency of trading cease to apply post-Brexit. The impact on gas markets would be minimal considering that the UK and the rest of Western Europe have diverse supplies and that gas markets are already well-integrated, with low price differentials and no congestion at the UK interconnectors.¹³ Risks would be more acute for electricity markets. With less market integration, grid resiliency would be reduced. The UK and its EU neighbours would need to rely more on costlier domestic back-up capacity and would forego the possibility of more efficient distribution of the region's intermittent renewable production and greater price stability on national power exchanges. Profitable transactions would be missed without market coupling. Wrong-way flows (i.e. flows inconsistent with the price differential) and sub-optimal use of cross-border capacity would increase in frequency.

¹² Barrett et al (2015)

¹³ Vivid Economics (2016)

Excluding the UK from the cross-border balancing initiative would also imply higher service costs for the national TSOs. Finally, if cross-border interconnectors can no longer participate in capacity markets, UK customers will have to rely on more expensive domestic resources to guarantee their security of supply. A Vivid Economics' study¹⁴ suggests that losses from these various market integration initiatives would be significant (~£260m pa by the early 2020's), but relatively small compared to the UK's overall electricity supply costs.

While border tariffs and a return to previous bilateral arrangements would make trading less attractive and interconnectors less profitable, the arguments in favour of market integration remain strong because of the UK's declining capacity margins and the shift towards more renewables. From the continental perspective, the UK is mainly a buyer of excess baseload power but it can also be a valuable source of supply in tight situations, as experienced during the February 2012 cold spell.¹⁵ In 2015, the UK was a net importer of electricity from France and the Netherlands with net imports of 13.8TWh and 8.0TWh respectively, representing 5.8% of the country's total electricity supplies.¹⁶ ENTSO-E has recently confirmed the economic potential of greater interconnection, as price differentials between the UK and neighbouring countries are likely to persist over the medium-term.¹⁷ In addition, further linkage with hydro, wind and nuclear production of neighbouring countries (in particular Denmark, France, Ireland and Norway) would help facilitate a more cost-effective decarbonisation in the UK. Likewise, continental Europe would be able to import production from the

¹⁴ Vivid Economics (2015)

¹⁵ DG Energy Market Observatory for Energy (2012)

¹⁶ UK Government (2016)

¹⁷ ENTSO-E (2016)

projected 4.5GW of additional offshore wind turbines that are expected to come online by 2021¹⁸. According to ENTSO-E's scenarios (or Visions), the higher the decarbonisation efforts, the greater the net benefit provided by further EU interconnection.

Several interconnector projects are under construction or are being discussed between the UK and its neighbours.



Figure 1. Map of existing and planned interconnectors between the UK and neighbouring countries (Initial source: Pöyry, 2016)

If all projects reported under the 2015 EU list of Projects of Common Interest were to be commissioned, the UK would benefit from 10GW of new interconnection capacity,¹⁹ adding to the existing 4GW. Three projects (Nemo, Eleclink and NSN totalling 3.4GW) have met the Final Investment Decision (FID)

¹⁸ UK Infrastructure and Projects Authority (2016)

¹⁹ Pöyry (2016)

and are very likely to reach commissioning, although they could face delays, due to the renegotiation of regulatory arrangements.²⁰ The others probably face higher risks. Not only could financing costs increase due to the near term uncertainty, as for all other UK investment projects, but UK interconnectors may also lose eligibility for EU financial support under the Connecting Europe Facility (CEF). To date, CEF funding allocated to technical studies for UK-related electricity projects amounts to €55.8m.²¹ Investors, but also regulatory authorities, may take a more cautious approach towards interconnector projects. In December 2016, the French energy regulator (CRE), decided to withhold its decision on the non-FID IFA2 project and gather stakeholders' views on the expected benefits of the project in the context of Brexit.²² The objective is to determine whether the project is still providing a net benefit when restricting the scope of the appraisal to the remaining EU27, and define the regulatory incentives in accordance with this updated assessment. In addition, CRE suggests that the uncertainties around Brexit increase the risks that the project is abandoned or that its profitability is reduced. Therefore, CRE is considering the introduction of additional regulatory measures to ensure French consumers do not bear a disproportionate share of these risks. This example shows the difficulty for national authorities and project developers of navigating the uncertainties created by Brexit, despite the mutual interest in electricity market integration. Ultimately, if interconnectors with the UK are perceived more risky, it could also give a boost to competing projects such as the Norway-

²⁰ Sia Partners (2016)

²¹ EU Innovation and Networks Executive Agency (2016)

²² Commission de régulation de l'énergie (2016)

Germany and Ireland-France interconnectors.²³

Implications for the Irish energy system

Network investments and coordination efforts made over the last two decades have significantly increased the interdependency between the electricity systems of Northern Ireland (NI) and the Republic of Ireland (IE). Since 2007, NI and IE operate a single wholesale electricity trading pool – the Single Electricity Market (SEM). The SEM operates in multiple jurisdictions with dual currencies and represents the first market of its kind in the world. A reform of the SEM is currently under development to ensure compliance with the Electricity Target Model. The new proposed market is called I-SEM or Integrated Single Electricity Market. While Brexit should not put the current SEM at risk, the new I-SEM may face uncertainties²⁴. The project is viewed as beneficial for the Island of Ireland and regulators from NI and IE have recently confirmed their intention to launch the I-SEM by May 2018.²⁵ However, the functional operation of the market is expected to become more complex after Brexit, with significant challenges around market rules and customer data protection for instance.²⁶

The SEM is connected to the GB electricity market with two interconnectors, Moyle running between NI and Scotland (500MW) and EWIC running between Wales and IE (500MW). These linkages may expose Ireland to the vulnerabilities of the post-Brexit GB electricity system and influence decisions for further interconnection from Ireland to mainland Europe.

Security of supply is also a concern with regards to oil and gas supplies, for which Ireland is mainly dependant on UK transit. The UK will no longer be bound by EU legislation on the sharing of energy resources under tight supply conditions.²⁷ Without the EU 2010 Regulation on gas security of supply, there would be higher risks that the UK takes unilateral actions affecting supplies to Ireland in times of crisis. Likewise, the share of Irish oil stocks currently stored in the UK may need to move if the 2009 oil stocks Directive cease to apply to the UK.²⁸

Legislative uncertainty

Depending on the Brexit outcome, with the exception of *Brexit-Lite*, significant uncertainty is likely to result in a sector where certainty is needed to make the large investments (as describe earlier). This uncertainty arises from the complexity of unpicking the legislation, but also a lack of clarity of what would be repealed. The so-called Great Repeal Bill would repeal the European Communities Act 1972, and bring all EU laws into the UK statute book. A next step would then be for Parliament to decide which of the former EU laws were kept and what should be taken off the statute book, leading to many years of uncertainty.

UK energy and climate policy is closely tied to that which has been developed at the EU level, such as obligations to meet specific renewable energy targets, or delivery of domestic climate target via the EU ETS. There are real risks of repealing specific legislation on energy and climate obligations, particularly as a key argument of leave supporters was to remove the additional cost of EU rules.²⁹

²³ Grubb and Tindale (2016)

²⁴ PWC (2016)

²⁵ SEM Committee (2016)

²⁶ Higgins and Costello (2016)

²⁷ Higgins and Costello (2016)

²⁸ Barrett et al (2016)

²⁹ Grubb and Tindale (2016)

The Committee on Climate Change (CCC) estimate that policies agreed by the UK at EU-level have contributed around 40% of the reduction in UK emissions since 1990. Furthermore, they estimate that EU policies, subject to strengthening, would cover 55% of the emissions reduction required in the UK to 2030, reducing the identified policy gap.³⁰ Therefore, repealing or weakening of the legislation could impact on the policy package required for achieving climate targets.

Another perspective is that EU membership actually does not benefit UK climate policy.³¹ This is because domestic emissions reduction targets are relatively more ambitious, and policy instruments such as the EU ETS, while allowing for cost-effective compliance for UK industry, are not considered effective in decarbonising the sector.

If the UK were to leave the EU ETS as part of the negotiated agreement, it would mean that it could no longer tie its carbon budget setting for the currently traded sector to allowances under the scheme. Domestic budget setting in the absence of the EU ETS would need to be determined on territorial emissions alone, and would perhaps benefit from lower levels of uncertainty concerning allowance levels in future years, and as some have argued for, be dependent on domestic action alone without opportunity for offsetting by other countries.³²

There would also be implications for Member States remaining in the EU ETS. Given that the UK is a net buyer, its withdrawal could see prices, already low, dropping further. There are also the transaction costs associated with re-adjustment of the EU wide cap, and administration of the scheme.³³ More broadly, it is questionable whether the EU can meet its

40% emission reduction target by 2030 without the UK on board. Even in the case of a downward adjustment, the EU may face a difficult negotiation across the EU27. The UK progress in mitigation is higher than the EU average which means that the remaining Member States will need to accept a commensurately larger share of the burden.³⁴

Political influence

All Brexit outcomes are likely to lead to a new political balance within the EU, which will influence future EU energy policy. The UK has been recognised as a leader in terms of stated climate ambition, and been an important proponent of initiatives such as the Internal Energy Market, as an early mover towards liberalisation.³⁵ Within Europe, on climate policy in particular, there is a question as to whether the EU would lose some of the political momentum brought by the UK, particularly at a time when it is most needed, post-COP21.

It could also shift away from the more market-based approach to energy and climate policy, supported by the UK, and potentially move forward with policy steps that were opposed by the UK, such as mandatory national targets for renewables, a more ambitious energy efficiency target or greater oversight powers for the European Commission in the context of the Energy Union project.

On the international stage, there is a question as to whether the UK would bring such clout without moving en bloc with its European neighbours. Specific commentators suggest that under any Brexit outcome, the UK would lose influence.³⁶ With recent political changes in the USA, strong leadership on this issue is at a premium. However, post-Brexit, the UK

³⁰ CCC (2016)

³¹ Helm (2016)

³² Sandbag (2015)

³³ EPRG (2016)

³⁴ Fischer and Geden (2016)

³⁵ Helm (2016)

³⁶ Froggatt et al. (2016)

will need to find its global voice, and the climate agenda could be one on which it can perhaps speak with clarity.³⁷

Conclusions

The overriding challenge for the UK's energy sector will be dealing with the ongoing uncertainty around the eventual outcome of Brexit, and the impact this has on the investment for new generation capacity and associated infrastructure needed. As stated in his recent evidence to a Parliamentary select committee on the implications of Brexit,³⁸ Professor Grubb stated that 'We deal with the fundamental challenge that energy is a very long-term business and what the industry wants more than anything else is certainty against which to invest.'

It is fair to say that climate and energy policy did not feature heavily in the referendum campaign on either side (although it is true that Brexiteers appear disproportionately lukewarm on climate change³⁹). While an exit could mean the UK would have greater flexibility in energy and climate policy e.g. on state aid rules or capacity markets, there is a question as to whether that greater flexibility would better help achieve UK energy and climate goals. The IEM is likely to help with system flexibility both in the UK and for the wider EU. Isolating the UK from the rest of the European electricity system would require more domestic investments to maintain security of supply in a context of rising intermittent production. In addition, EU legislation provides a 'double lock' for UK climate policy, bring more stability and predictability for investors. And if the Energy

Union succeeds, the UK and other Member States are likely to meet their goals most effectively as a bloc.

There is also the issue of wider energy cooperation between UK and EU institutions, whether that be the research activities under Euratom, particularly in relation to nuclear fusion,⁴⁰ or those activities under broader EU research funding. While not specific to energy and climate sector, the Royal Society states the importance of EU funding for UK research, with the UK a net beneficiary.⁴¹ For both the UK and the EU, the collaborative nature of research on climate and energy issues will undoubtedly be impacted in the short term due to ongoing uncertainty.

As in all negotiations, the UK will also want a deal that safeguards the benefits of the internal energy market, particularly interconnection with the EU, while avoiding losing all authority on future legislative developments. How it retains those benefits, through remaining in the IEM, is likely to be a function of willingness to accept the rules of the game. On these particular rules, the appeal of liberalised markets originally promoted by the UK means that much of these could be retained. However, this might not be enough if the broader principles of the single market are not adhered to.⁴² Negotiations with Switzerland on the introduction of market coupling have been put on hold precisely because of persistent restrictions on free movement.⁴³ Therefore, the prospects of a piecemeal approach, as foreseen under *Brexit-Select* may be somewhat unappealing to EU negotiators.⁴⁴

³⁷ A vacancy on global climate leadership just opened up by Leah Davis. November 2016.

<https://greenallianceblog.org.uk/2016/11/10/a-vacancy-on-global-climate-leadership-just-opened-up/>

³⁸ House of Lords (2016)

³⁹ DESMOG UK blog, <https://www.desmog.uk/brexit-climate-deniers>

⁴⁰ Clery (2016)

⁴¹ The Royal Society (2015)

⁴² Helm (2016)

⁴³ EPRG (2016)

⁴⁴ Froggatt et al. (2016)

With regard to the Internal Energy Market, but also in regard to other energy policy initiatives such as the EU ETS and Euratom, the UK and the EU seem to have very little to gain from a hard Brexit. Treating energy separately would be sensible from an economic and environmental perspective, although it could be politically unacceptable for the UK given the Brexiteers' call for taking control and funding back, but equally unacceptable for the EU if the terms of the deal are more favourable than what has ever been previously agreed with other non-EU members.

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