

The effects of Brexit on the UK power market – Part One

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In part one of a two part Brexit briefing, we look at the potential impact of the UK's vote to leave the EU on the UK electricity market. We have developed two scenarios, depending on the outcome of the UK's negotiation with the EU. In the second part of our briefing, we will evaluate the impact of these scenarios.

Scenario 1: Uncertainty and status quo	Scenario 2: Uncertainty and less favourable trade
<p>After a period of uncertainty, the UK agrees a trade deal similar to the current arrangements:</p> <ul style="list-style-type: none"> ▪ One-off reduction in UK GDP ▪ Fall in electricity demand of 1.5% over the next 2 years ▪ UK oil and gas prices increase by 5-10% over the next two years (forex impact) ▪ No impact on carbon prices ▪ RES roll-out reduced in short term ▪ Short-term increase in thermal developer cost of capital ▪ Hinkley delayed by 1 year ▪ Near term interconnector projects pushed back by 1-2 years 	<p>After a period of uncertainty, the UK agrees a less favourable trade deal:</p> <ul style="list-style-type: none"> ▪ Ongoing impact on UK GDP growth ▪ Fall in electricity demand of up to 3.5% to 2030 ▪ UK oil and gas prices see sustained increase of 5-10% (forex impact) ▪ No impact on carbon prices ▪ RES roll-out reduced in short/medium term ▪ Short-term increase in thermal developer cost of capital, medium-term reduction in cost of capital ▪ Hinkley delayed by 1 year ▪ Near term interconnector projects pushed back by 1-2 years ▪ Some interconnection projects cancelled

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The long term direction of energy policy is likely to be unaffected by Brexit. However, the macroeconomic consequences may be felt by energy market investors and customers alike for some time to come.

Introduction

Last week markets responded with shock to the news that the UK had voted to leave the EU. The pound tumbled against the dollar and the Euro, and stock markets in the UK and other major European countries initially fell rapidly. As the dust begins to settle on the UK vote, it is clear that we are facing a significant period of uncertainty and that there is little clarity on the relationship between the UK and Europe that will emerge from future negotiations.

What is clear is that Brexit will have a major effect on most sectors of the UK economy. In this briefing, we examine the different ways in which Brexit may impact the electricity sector. In particular, we develop credible scenarios for future market developments by examining the potential consequences of Brexit for:

- customer demand;
- fuel prices, including carbon;
- new plant build; and
- interconnection.

In a second briefing, we will draw this analysis together into some credible scenarios for future developments, which we will then evaluate.

Customer demand

The outlook for customer demand depends in part on developments in the wider economy, on the link between economic activity and electricity demand, and on broader climate policies related to energy efficiency and new uses for electricity (e.g. electrification of heat and transport).

Macroeconomic outlook

In the short term, there is significant uncertainty about future economic and trade policy, as it is likely to take at least two years for any post-Brexit arrangements to be agreed. This uncertainty will impact UK GDP. Most economic forecasts suggest a short-term fall, as a result of slowing investment and consumption. For example, post-referendum, Goldman Sachs forecasts a 2.75% impact on GDP over the next 18 months, with expected 2017 GDP growth being downgraded from 2% to 0.2%, whilst Morgan Stanley estimates that Brexit will result in a 1.0% hit to UK growth in a medium stress scenario for 2017.

In the longer term, the impact on GDP growth is likely to depend on the trading arrangements the UK agrees with trading partners following its exit from the EU and on the impact of any final settlement on relationships within the United Kingdom (particularly with Scotland). If the UK secures less favourable trading arrangements, trend GDP growth is likely to be below that forecast previously. Looking out to 2030, a number of commentators have estimated that Brexit will lead to a GDP impact of at least 2% and possibly as much as 7%.

Exhibit 1 GDP Forecasts

Organisation	Lowest impact on GDP, 2030	Highest impact on GDP, 2030
CEP	-2.6%	-7.9%
HMT	-3.8%	-7.5%
OECD	-2.7%	-7.7%
NIESR	-1.8%	-7.8%
PWC/CBI	-1.2%	-3.5%
Oxford Economics	-0.1%	-3.9%

Source: IFS

In light of the above, we consider two scenarios for the wider economy:

- **Status quo eventually:** a hiatus on spending as negotiations on shape of Brexit proceed, followed by a return to an economic deal broadly similar to that of today, resulting in a one-off short-term GDP impact; and
- **Less favourable trade:** a longer hiatus followed by a less favourable deal on access to the single market and other economies, resulting in both a one-off GDP impact and lower trend economic growth.

Impact on electricity demand

The relationship between GDP and electricity demand has become more complex over time as a result of factors such as energy efficiency and behind-the-meter generation. Nevertheless, we can reasonably expect that a fall in GDP will lead to reduced electricity demand. With the exception of 1990s, energy demand has historically changed on a % by % basis with changes in GDP during recessions (see table below).

Exhibit 2 GDP changes during recessions

Recession	Change in GDP	Change in Energy Demand
1981	-3.4%	-3.6%
1991	-1.3%	-0.1%
2009	-5.9%	-6.2%

Source: ONS, DECC

On this basis, and taking a conservative approach of assuming each percentage point decline in GDP translates into only a 0.5 percentage point decline in demand, we may expect to see electricity demand fall by up to 1.5% over the next two years. Looking out to 2030, if a less favourable trade deal emerges, we could expect to see electricity demand reduce by up to 3.5%.

We may expect to see electricity demand fall by up to

1.5%

over the next two years

Broader climate policy

The UK's Climate Change Act sets out legally binding emissions targets which arguably already go further than European policy requires. As such, we do not anticipate that the Brexit vote should lead to any significant change in these targets, not least given the UK's recent commitment to them in the recently agreed Paris climate change deal.

Energy efficiency policies in particular, which have had a material impact on the recent relationship between economic growth and demand, may be expected to be largely unaffected. Significant impetus for energy efficiency policies has come from national government policy, and this is likely to continue given an ongoing focus on alleviating fuel poverty. While it is harder to say whether the longer term policies around electrification of heat and transport will continue on the same course, or whether alternative ways of meeting the targets will be sought, uncertainty in this area existed before the Brexit vote.

Fuel and carbon prices

Global commodity prices

Global commodity prices are determined by global supply and demand. Demand for commodities from the UK alone represents a relatively small part of global demand (c.1.5% of global oil demand and c.3% of global gas demand). Therefore, if the majority of the macroeconomic impact is contained in the UK, the impact on global commodity prices should be relatively small.

However, numerous forecasters are projecting a broader short-term economic impact for the EU as a whole (and potentially more widely) as a result of Brexit uncertainty. For example, Goldman Sachs has reduced its Eurozone GDP growth forecast from 1.5% to 1.25% while the IMF estimates a fall in EU GDP of up to 0.5%. Under such a scenario, global commodity prices are more likely to be affected:

- Europe makes up a more material part of global commodity demand (16% of oil and nearly 30% of global gas demand); and
- the knock on impacts of a slowdown across Europe in emerging markets and the US would be likely to imply a global reduction in commodity demand.

However, any such impact is unlikely to persist beyond the short term, as the supply side of commodity markets will react. After the financial crisis, global commodity prices fell but then rebounded as the supply side of the markets adjusted and as governments acted to stimulate economies.

Imported commodity prices

In practically all scenarios for global prices, commodity imports to the UK are likely to be more expensive in the short term. Brexit has already led to a substantial fall in the value of the pound against the dollar and, to a lesser extent, against the Euro. While more uncertain, it would appear likely that a weaker longer term outlook for the UK economy would also result in ongoing weakness for sterling.

A lower value of the pound against the dollar would make commodities typically traded in dollars (such as oil) more expensive. A lower value of the pound against the Euro would have a similar effect.

Given the currency movements we have observed to date, and assuming sterling remains weak (i.e. low one-thirties against the dollar), we estimate that oil, gas and coal prices in the UK could increase by as much as 5-10%. We note that this assumes no significant offsetting effect on global commodity prices. This is likely to have a knock on impact on UK electricity wholesale prices.

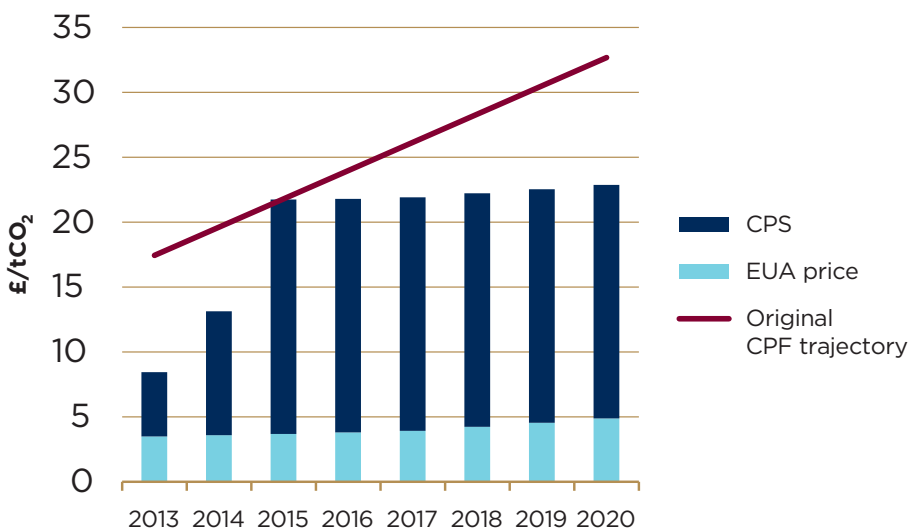
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Carbon prices

The other important commodity consumed by the power market is carbon. Whether the UK remains part of the Emissions Trading Scheme (ETS) is again dependent upon the outcome of Brexit negotiations. However, irrespective, there may be reasons to believe that carbon prices would remain broadly constant.

The effective carbon price in the UK is currently determined by the Carbon Price Support (CPS) rather than the EU ETS. And the CPS is a source of significant revenue to the government; revenue that might be valued more highly in any economic slowdown.



Source: Budget 2016, HMRC, Bloomberg

If the UK remains in the ETS (with a rising carbon price), pre-Brexit scenarios of a gradually falling CPS “top up” still look credible. If, on the other hand, the UK exits, the question will be whether the government increases the CPS to keep effective carbon prices where they are today.

The biggest concern about a significantly higher CPS might be its impact on competitiveness. This concern would be greatest if a European slowdown led to a further fall in EUA prices. However, the greater flexibility being built into the ETS may make this scenario less likely.

In consequence, we estimate that carbon prices are likely to be relatively unaffected by Brexit.

New plant build

There are three categories of new plant build to consider:

- renewables;
- thermal; and
- nuclear.

Renewables

European targets were one driver of renewable energy build out in the UK; but the UK’s own commitment to decarbonisation under the Climate Change Act would imply a need to develop renewables even absent EU requirements. Indeed, on 30th June, Amber Rudd confirmed the government’s commitment to the Climate Change Act through the Fifth Carbon Budget, which sets out reductions in emissions for the 2028-32 period of 57% below 1990 levels, significantly beyond the 40% cut required under EU legislation. This government has also confirmed its ongoing commitment to various other policies such as new nuclear and the closure of unabated coal fired stations.

Before Brexit, there was some considerable uncertainty over renewable policy (e.g. cancellation of CfD allocation rounds, a “ban” on new subsidised onshore wind farms, and an increased focus on affordability). Post-Brexit, in the short term, ongoing investment in non-ROC renewables development remains likely to be constrained, particularly for sites in Scotland where uncertainty is arguably greatest.

As to the longer term, credible scenarios of future renewables build out pre-Brexit saw ongoing subsidy spending broadly consistent with today’s £7.6bn Treasury cap, albeit with the country failing to meet the Climate Change Committee’s recommendations in terms of carbon intensity of grid electricity. It would be difficult to slow down renewable deployment further beyond such scenarios while still retaining a plan to decarbonise in the decades ahead.

However, more bullish scenarios around renewable deployment and support may now be less likely as a result of pressure on Government budgets.

Thermal generation

Sponsors of new thermal projects (CCGT or OCGT) will be relying on a combination of energy and capacity revenues to fund their developments. In the short term at least, developers will face more uncertainty – not least in relation to input costs of (imported) capital equipment and electricity price levels.

The UK is facing a capacity shortage: some capacity will be needed in the short term. If bidders to provide capacity factor this uncertainty into their hurdle rates, it will imply higher capacity auction prices for any given level of build.

In the longer term, the direction of financing costs is less clear. As of yet, there is no evidence that corporate debt has become more expensive. While credit spreads have increased slightly, the fall in sovereign bond yields has more than offset this implying that, at the time of writing, corporate debt may be raised slightly more cheaply now than it could the day before the referendum. This, particularly in combination with lower demand growth, may imply lower capacity prices.

Hinkley Point C

EDF has said it will aim to make a final investment decision on Hinkley Point C this autumn. Initial comment from EDF following the referendum result has indicated continued commitment to the project. However, EDF will no doubt wish to consider prudently all aspects of the project before it reaches final close.

The Hinkley project is largely immune to the market effects discussed above in this paper, given the Contract for Difference (CFD) it has agreed. However, EDF will still be exposed to financing and cost risk. The weakness of the pound may increase some project costs (e.g. for plant priced in dollars or euros), but an economic slowdown may mitigate this (e.g. for labour). And as noted above, there is as of yet no evidence that corporate debt finance has become more expensive following Brexit.

However, in order to fund Hinkley C and other large scale projects, it is understood that EDF needs to make divestments. These divestments are politically sensitive in France – potentially more so now following Brexit – and there will be a presidential election in 2017.

If general uncertainty causes even a small delay in taking the final investment decision for Hinkley, it may be that the commissioning date of the project will be put back by a longer period – say 12-18 months. Such a delay may still be reasonably cheap for EDF. The CfD terms change only for commissioning dates after 2029. After this, the CfD is shortened by one year of delay up to 2033, after which it would be cancelled.

Interconnection

The referendum result is likely to delay progress on new interconnector projects between the UK and other markets.

Interconnectors would be materially impacted by any limits on UK access to the single market. Flows of electricity might face tariffs. Until future trading terms are resolved, it may therefore be difficult to value interconnector investments. Any interconnector projects that have not yet reached a final investment decision look likely to wait for present uncertainty to be resolved.

If the UK does still have access to the single market, it would be reasonable to assume that previously envisaged links will be built. The drive to increased interconnection is largely home grown – Ofgem’s cap and collar mechanism is designed to support interconnection with balanced risks between sponsor and customers. The exception may be very marginal projects (especially those which would have sought development funding from the EC), which may be at risk.

Exhibit 4 Post-Brexit scenarios

Scenario 1: Uncertainty and status quo	Scenario 2: Uncertainty and less favourable trade
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Source: Frontier Economics / LCP

So what?

On the basis of our analysis above, we have defined two possible scenarios for evaluation in terms of post-Brexit electricity market outcomes.

Under both scenarios, we would expect the 5-10% increase in commodity prices over the next 2 years to feed through to a similar increase in wholesale electricity prices. These costs, ultimately, would be passed through to consumers. Under current prices, a 5-10% increase in wholesale costs would lead to an £8-16 increase in the average household's annual electricity bill.

In the longer term, prices under Scenario 1 would be expected to largely revert back to the levels expected pre-Brexit, but in Scenario 2 we would expect these higher prices to persist.

However, in the long term there are a number of other factors that will impact electricity prices. Reductions in new interconnection and renewable capacity, and potentially also reduced investment in large, efficient gas plant, could put upwards pressure on prices. This may be partly offset by the fall in demand due to lower GDP growth.

The longer term impact on consumer bills is also less clear-cut. In Scenario 2, higher power prices would be offset by lower support payments to low carbon sources, particularly with reduced RES roll-out and delays to Hinkley. In addition, lower demand growth is likely to mean the requirement for new capacity is reduced, which may lead to lower Capacity Market payments.

Finally, the government's ability to meet its carbon targets may also be affected. Lower RES-rollout and delays to Hinkley would likely mean that reductions in CO2 emissions will be harder to achieve, though again these effects could be partly offset by lower demand for electricity.

In Part Two of this briefing, we will evaluate these impacts in more detail, using National Grid's new FES scenarios as a starting point.

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Brexit has created additional uncertainty in an already challenging investment environment. Until there is clarity on the key issues we risk reduced investment and potentially higher costs for consumers

About LCP

LCP's Energy Analytics practice has been at the heart of Electricity Market Reform (EMR) analysis since the first design proposals. We provide analytic and consulting services that support the industry in understanding the impacts of these significant reforms to the GB power market. We also provide some of the key tools in the industry, including the Dynamic Dispatch Model that is used by DECC and National Grid for analysis such as the final EMR delivery plan and the setting of the capacity requirement for the first capacity auction. More widely we support our clients to understand how these fundamental changes to the market will affect portfolio profitability and risk over the medium to long term. We provide a range of services including asset valuation, impact analysis and strategic advice.

About Frontier Economics

Frontier Economics is one of the largest economic consultancies in Europe with offices in Brussels, Cologne, Dublin, London and Madrid. We use economics to help clients improve performance, make better decisions and keep ahead of the competition. Our expertise is broad, covering not just micro-economics but finance, statistical modelling, game theory, market research and even the psychological side of economics.

We work with a wide range of clients from the private sector, government, regulators, other public authorities and charities. We distil complex issues to focus on what matters to our clients. We help them make credible arguments and good decisions, backed up by robust evidence and analysis. While our analysis may be complex, the advice we provide is clear, honest and delivered using plain language.



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If you would like to discuss any aspects of this note in more detail or any area of our wider services please contact Tom Porter (LCP) or Dan Roberts (Frontier Economics) using the details opposite.

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