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BRIEFING

RUNNING ON EMPTY?

WHY THE UK NEEDS EUROPE FOR AFFORDABLE AND SECURE ENERGY

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June 2013

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ACKNOWLEDGMENTS

The author would like to thank Holly Page for her support on the analysis of UK/European interconnection. Thanks also go to Jim Watson, Jonathan Gaventa, Jenny Banks and Will Straw for their helpful comments and contributions.

This project is generously supported by the Foundation for European Progressive Studies (FEPS) and the World Wildlife Fund (WWF).

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EXECUTIVE SUMMARY

Europe is in the grip of fiscal austerity, with rising unemployment and protracted economic weakness following the 2008 financial crisis. High energy prices are adding to the challenge, squeezing vulnerable households and exposing businesses in Europe to competition from global economic counterparts like the US, where gas and electricity prices are significantly lower.

Anti-European sentiment is growing in many European countries, as the impact of the eurozone crisis has appeared to diminish the EU's claims to be a 'beacon' of prosperity.[1] Centralised decision-making on budgets, bailouts, and base rates has further undermined the democratic legitimacy of an institution which has often been detached from the polities of individual member states but appears more so now than ever before. As a result, faith in the European Union (EU) is diminishing and voter anger is rising across the continent. This has played out in the UK through the rise of Ukip and the increasingly Eurosceptic stance of the Conservative party.

Meanwhile, the rise of climate scepticism in the UK and across Europe is feeding more vocal political opposition to EU regulation and the cost of subsidies for renewable energy. These sceptical groups argue that Europe will become uncompetitive by 'going it alone' on reducing carbon emissions. This is despite the fact that many other countries, including China and the US, are taking climate change more seriously now than at any previous point.

These challenges will form the backdrop to negotiations between Europe's political leaders as they seek a deal for a new climate and energy policy package for 2030. With key negotiations taking place in the next few years leading up to 2015, this report argues that European leaders will need to craft a policy agenda for 2030 that is in tune with the times. It should go beyond a focus on climate targets to place competitiveness and security of supply at its centre.

i. Europe needs to 'cooperate to compete'

In 2012, industry gas prices were more than four times lower in the US than in Europe, with household gas prices and electricity prices also significantly lower.[2] In the face of high energy prices and costs, greater European cooperation is needed to complete a single, interconnected energy market – this could reduce energy prices for consumers and business by €65 billion in 2015 compared to 2012.[3] Greater intra-EU trading of domestic energy sources – such as wind and solar power – could reduce the costs in the overall energy system by up to €8 billion by 2020 and reduce investment costs by €7 billion. Maximising Europe's indigenous energy supplies would also cut the EU's foreign oil and gas import dependency, which is currently set to increase to more than 80 per cent by 2035.

ii. The UK needs the EU for affordable and secure energy

A more interconnected energy market in Europe could reduce UK consumer energy bills by over £200 million pounds annually[4] and boost jobs, growth and exports in the UK over the long term.[5] Being part of a larger, more diverse electricity system would also improve the UK's long-term energy security.

1 See http://ec.europa.eu/citizenship/news-events/news/15032012_en.htm

2 See http://ec.europa.eu/europe2020/pdf/energy2_en.pdf

3 See http://ec.europa.eu/europe2020/pdf/energy2_en.pdf

4 This is based on a scenario for the development of a 'meshed grid' connecting offshore wind generation fields in the North Sea, as compared to a 'status quo' scenario. See http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2200953

5 For example see http://ec.europa.eu/energy/infrastructure/studies/doc/2010_11_ten_e_revision.pdf

In the short term, the UK's electricity links with Europe could help the country to avoid an electricity 'capacity crunch'. The energy watchdog Ofgem has warned that the UK will see electricity capacity margins drop from around 14 per cent in 2012 to 4 per cent in 2015/16 as Britain replaces ageing infrastructure and retires old fossil-fuel power stations. As a result, Ofgem has warned that the UK could face energy shortfalls or, in extremis, blackouts, particularly in 2015/16 and 2016/17. Ofgem cautions against relying on interconnection with other countries to maintain security of supply, highlighting concerns about the level of security of supply in neighbouring European countries. However, our analysis of past performance shows that UK and international connectors are highly reliable, even at times of high demand.[6]

iii. Winning public support

Unlike some areas of European policy, such as immigration or the economy, cooperation on energy attracts significant public support. Almost 80 per cent of European citizens are in favour of their country sharing energy in the event of shortfalls and 60 per cent of Europeans think they would be better protected through a coordinated European approach to energy policy than by national measures alone.[7] A 2012 YouGov poll found that tackling climate change is one of only two issues out of 16 where those surveyed in six European countries felt the EU rather than national governments should have control.[8] In the UK, when asked whether countries in Europe should cooperate more closely on climate change or handle the issue at the national level, 51 per cent of respondents answered 'more closely' while 20 per cent said 'less closely'.[9]

iv. Conclusions

A new purpose is needed to encourage growth across the continent and provide renewed legitimacy for European cooperation. Greater energy market integration meets shared goals on improving competitiveness, security of supply and sustainability while increasing trade and job creation. It is, therefore, a prize worth striving for.

If the UK is to reap the benefits of the single energy market and greater electricity connection with Europe, politicians will need to be prepared to explain why this is in Britain's interests. At a time when trust in Europe's institutions is at a low point, UK political leaders should be willing to argue that Britain's self-interest can be served by working in Europe's shared interest.

Greater energy market integration is needed to boost Europe's competitiveness and improve levels of energy security

- A single, interconnected energy market in Europe will reduce energy prices for consumers and business and help accommodate an expansion of renewable energy. However, the construction of electricity connections between countries is not keeping pace with policy ambitions.

6 See page 22 for details

7 See http://ec.europa.eu/energy/studies/doc/20110131_eurobarometer_energy.pdf

8 Other issues included fighting terrorism and international crime, reducing poverty, immigration and military action. Countries surveyed included the UK, France, Germany, Italy, Sweden and Denmark. There was support for this from over half of those interviewed in each country, from 51 per cent in the UK to 76 per cent in Germany, suggesting that climate change is one of the few areas where the benefits of European cooperation are understood and encouraged. See page 10 for details.

9 See page 13 for details

- Accelerating the deployment of electricity infrastructure should be a key aim of the EU 2030 climate and energy package. An 'infrastructure target' would help to define the level of transmission and distribution infrastructure needed to realise ambitions for a single energy market. This would need to reflect the different levels of electricity connection appropriate for different member states. EU 2030 negotiators should consider whether a target or alternative mechanism should be adopted for this.
- Capacity mechanisms developed by member states, including the UK, to provide back-up capacity for renewable energy should be modified to ensure interconnection, electricity storage and demand-side responses are able to secure a significant proportion of capacity contracts as a means to ensure security of supply. The 2030 climate and energy package should ensure that capacity mechanisms in Europe are compatible, as far as possible.
- This would also avoid the unintended consequences of introducing a capacity market early, which could include windfalls for existing generators, reducing the amount of low-carbon capacity which can be funded under the Levy Control Framework, and undermining the development of demand-side measures.

The UK needs interconnection with Europe to secure its short-term and long-term energy security

- The UK does not currently rely on electricity connections with Europe to avoid electricity shortfalls. However, the UK should reassess this position given Ofgem's warnings of an electricity capacity crunch over the next few years[10] (particularly in 2015/16 and 2016/17) as generation capacity temporarily falls. Using electricity capacity from interconnectors would avoid the need to build expensive new generation capacity or interrupt industry energy supplies.
- In the Energy Bill delivery plan, the UK government needs to set out clear objectives for the role interconnection will play in the energy system up to and beyond 2020. This should include setting out how interconnection, as well as other balancing technologies,[11] will help to balance variable renewable power and ensure UK security of supply.

10 See http://www.ofgem.gov.uk/Markets/WhlMkts/monitoring-energy-security/elec-capacity-assessment/Documents1/Electricity%20Capacity%20Assessment%202012.pdf

11 Such as storage, flexible generation, storage and demand-side response.

1. THE EU 2030 ENERGY PACKAGE: IN SEARCH OF POLICY CERTAINTY

Uncertainty about the EU's low-carbon ambitions beyond 2020 is shaking market confidence and increasing investment costs (Business Europe 2013). Without a successor to the current EU 2020 climate and energy package,[12] there will be a gap of 30 years during which very little policy guidance has existed. Yet investors and planners need medium-term signals in order to carry on investing in the technologies that are reducing our carbon emissions. Companies and investors need the EU to put in place a framework with targets that take us up to 2030, which – for some companies – is just one investment cycle away.

In March 2013, European commissioners Connie Hedegaard and Gunther Oettinger launched a consultation on the EU's 2030 framework for climate and energy policies.[13] The European Commission (EC) is hoping to table a draft proposal on the 2030 framework by the end of 2013, with the aim that the new policies are in place before the EU transition in 2014. There is some concern that the EU will fail to agree to new legally binding targets before the world climate summit (the United Nations Framework Convention on Climate Change 21st Conference of the Parties or UNFCCC COP 21) takes places in Paris at the end of 2015. Either way, much of the groundwork for these negotiations is likely to be debated before the current commission and parliament expire at the end of 2014, so the period between the German election in September 2013 and the run-up to the European elections in spring 2014 will be critical.

Some countries have announced their negotiating positions, while others are forming a view.

- The UK has announced that it will call for a carbon emissions reduction target of 40 per cent on 1990 levels, while pushing for this to be extended to 50 per cent if a global agreement is reached at the UNFCCC meeting. The Liberal Democrat energy secretary Ed Davey is believed to have won this concession from the Conservative-run Treasury in return for sacrificing the adoption of a renewable energy target for 2030.
- In Germany, disagreements between the environment and economics ministries have prevented an official position from emerging. Although progress is expected following the federal election, there are reportedly some around the Christian Democratic Union party arguing that the EU should only develop a non-binding declaration before the critical UNFCCC meeting.[14]
- Poland, which vetoed a critical European council conclusion on the energy roadmap in June 2012, is sceptical about further targets. It wants an international agreement to come before new ambitious EU targets.
- President Hollande of France has declared his support for an emissions reduction target of 40 per cent on 1990 levels by 2030. Because Paris plays host to the UNFCCC meeting in 2015, France has a strong interest in securing an EU deal – however, it is yet to announce an official position.
- Portugal is understood to be interested in pursuing discussions around renewable energy and transport targets. The stance that might be taken by Spain is unclear as austerity bites in that country. Other countries, such as the Netherlands, Sweden, Finland and Bulgaria, are still developing their position. Belgium and Italy, among other countries, are engaging in public consultation before coming to a view.

12 See http://ec.europa.eu/clima/policies/package/index_en.htm

13 See http://ec.europa.eu/energy/consultations/20130702_green_paper_2030_en.htm

14 See http://www.swp-berlin.org/fileadmin/contents/products/fachpublikationen/Paradigm_Shift_EU_Energy_Policy_01.pdf

The outcome of these negotiations will be a test of European political leadership on climate and energy policy. A new framework needs to agree overarching targets to cut carbon by 2030 on the pathway towards the goals Europe has already agreed for 2050. Failure to do this will make global agreement in 2015 through the UNFCCC process much less likely.

However, it is also the case that the EU's 2020 policy framework was negotiated at a time when political commitment to sustainability was widespread and fortified by a more confident economic climate. This time, European leaders are facing a trio of political and economic concerns which are likely to mean negotiations are more challenging: continuing economic stagnation, rising anger with EU institutions and a rise in climate scepticism.

2. THE CASE FOR CLOSER EUROPEAN COOPERATION ON ENERGY POLICY

Europe is in the grip of fiscal austerity, with rising unemployment and protracted economic weakness following the 2008 financial crisis. Anti-European sentiment is growing in many European countries, reflecting a loss of faith in Europe's political institutions. Positive views of the European Union are at or near their low point in most EU nations. A recent poll showed that the level of those in favour of the EU has dropped from a median of 60 per cent in 2012 to 45 per cent in 2013 (Pew 2013). Meanwhile, the rise of climate scepticism both in the UK and across Europe is feeding more vocal political opposition to regulation and the cost of renewable subsidies.

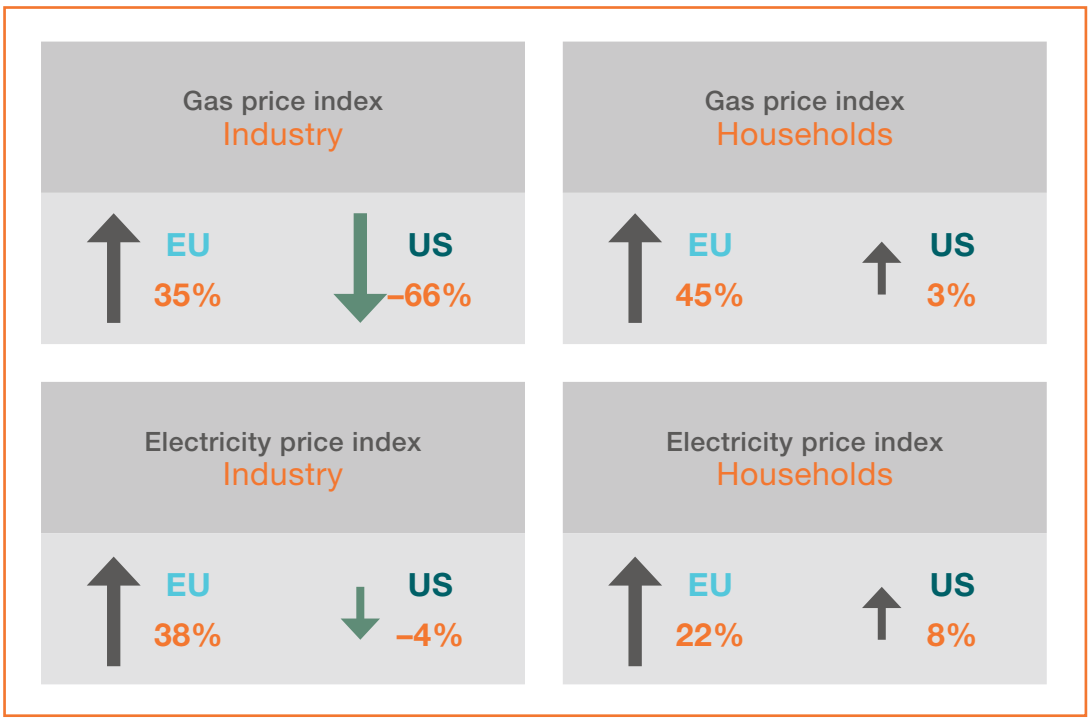
European leaders will need to overcome these challenges by crafting a policy agenda for 2030 which is more in tune with the times. While sustainability remains the ultimate goal, two other aspects of the energy policy 'trilemma' – competitiveness and security of supply – should come to the fore.

2.1 Cooperating to compete

Rising energy prices and volatility are key drivers of rising businesses production costs and falling economic activity and competitiveness in Europe (EC Enterprise and Industry 2012). This is in stark contrast with the US, where energy prices have fallen significantly as a result of the country's shale gas boom.

US industry gas prices have fallen by 66 per cent since 2005 while EU prices have risen by 35 per cent, as figure 2.1 shows. US industry electricity prices are also down by 4 per cent since 2005, while EU prices have risen by over a third. Consumers do not fare much better, as gas prices for households have gone up just 3 per cent in the US compared to 45 per cent in the EU, while household electricity prices have risen by 22 per cent in the EU since 2005, as opposed to just 8 per cent in the US.

Figure 2.1
Trends in energy price indexes, EU versus US, 2005–2012



Source: Recreated from European Commission 2013

At a recent meeting of the European Council concern at high energy prices and costs, as well as the wider jobs and growth crisis in Europe, led European leaders to prioritise action in four areas on energy policy (European Council 2013):

- the completion of an interconnected single energy market
- investment in energy infrastructure
- the diversification of Europe's energy supplies
- enhanced energy efficiency.

There are strong indications that completing the single energy market would result in more affordable energy prices for business and consumers. Savings that could be achieved have been estimated at €35 billion a year in electricity costs in 2015, compared with 2012 (European Commission 2013). Further market integration is expected to lead to an increase of 0.6–0.8 per cent in European GDP and 5 million more jobs by 2020 (Barroso 2011).

While completing the single energy market is a key priority, a strong policy framework for 2030 is also vital for European competitiveness. Europe's 'first mover' advantage in renewable energy technologies is being lost to China and the US, while European countries are becoming less attractive for renewable investors (Ernst & Young 2013). Greater clarity would help to end the policy uncertainty that is putting these jobs and growth at risk.

The EC also needs to act quickly to resolve the continued problems with the European emissions trading scheme (ETS), Europe's 'cap and trade' scheme for carbon emissions. Carbon prices have plummeted due to an oversupply of emission credits and therefore incentives have been reduced for companies to invest in energy efficiency and low-carbon technologies. The European parliament's rejection of a key vote on 'backloading' in April[15] saw the price of carbon slump to €3 per tonne and has done little to improve investor sentiment.

2.2 Improving energy security

Energy security can be understood in three different ways:

- **resource access** – how easily a country can secure energy
- **resource adequacy** – whether a country can provide a constant supply of energy, even at times of high demand, to its households and firms
- **operational security** – how well a country can balance supply and demand on its energy transmission and distribution networks or 'grid'.

By collaborating to build a strong market for low-carbon energy, Europe will improve the first of these dimensions – resource access. The EU imports 60 per cent of its oil and gas, and this is set to increase to 80 per cent by 2035 (European Commission 2013). In 2011 alone, the EU incurred €573 billion in fossil fuel import costs. Europe's import dependence is set to rise more sharply than in China, India and the US (where import dependence is set to decline) (ibid).

By maximising domestic renewable energy supplies, Europe will reduce its dependence on imports. According to projections by the European Climate Foundation, fuel sourced from non-OECD countries could fall from 35 per cent of total fossil fuels to 7 per cent by 2050 under a 'high renewable' energy scenario,[16] thereby significantly reducing vulnerability to fossil fuel price shocks (European Climate Foundation 2010). This would reduce European exposure to supplies from politically unstable regions and improve countries' balance of payments.

15 See http://europa.eu/rapid/press-release_MEMO-13-343_en.htm

16 Specifically, a pathway relying on 80 per cent renewable energy sources.

However, it is important to note that imports are not inherently problematic – greater flexibility to trade electricity in Europe, for example, will result in improved security of supply.

The key technologies that will provide these renewable energy supplies are likely to be solar and wind power.[17] This shift towards wind and solar and away from coal and nuclear across Europe affects the second dimension of energy security, resource adequacy. It leaves countries more vulnerable to shortages of electricity as they transition and, as a result, see demand rise for electricity as the transport and heat sectors decarbonise.

In addition, wind and solar power are variable – simply put, the sun does not always shine and the wind does not always blow. This poses a problem for the third dimension of energy security, operational security or keeping the grid secure.

Greater trading of electricity between European countries and more integrated electricity networks (known as 'interconnection') could ensure a more reliable supply of energy across the continent (European Climate Foundation 2012). Interconnection also provides a solution to the problem of the variability of renewable energy by balancing out these natural fluctuations. For example, it allows electricity to be transmitted northwards when the sun is shining in southern Europe and southwards when the wind is blowing in northern Europe.

With a relatively low capital cost, using interconnection and other balancing technologies[18] to maintain a reliable energy supply across Europe and keep the system secure is more cost-effective than building new generation infrastructure (ibid). It also offers a range of wider economic benefits, as we set out in section 5.

Some argue that the EU should follow the US example and achieve energy independence through the exploitation of shale gas reserves. Europe faces a serious challenge in finding new and affordable energy sources and reducing its reliance on foreign imports. However, a recent EU report (European Commission DG Climat 2012) found that extracting shale gas generally imposes a larger environmental footprint than conventional gas development, pointing to a wide range of risks.[19] These risks will need to be overcome if 'fracking'[20] is to play a role in meeting the EU's energy needs. Carbon capture and storage would also need to be developed in the 2020s and 2030s to allow unconventional gas to continue to play a role as Europe reduces its carbon emissions towards 2050. Building too much new gas-fired power generation represents a threat to the UK's carbon emissions reduction target.

In any event, it is unlikely that fracking will prove to be as cheap an alternative to renewable energy as it has been in the US (Bradshaw 2012). Regulatory costs tend to be higher in the EU due to better environmental regulation. Greater planning scrutiny and resistance from local communities is expected due to the higher population density in Europe. Incentive structures also differ within Europe, with landowners tending not to have mineral rights as they do in the US.

17 Other technologies such as hydro and bioenergy offer limited scope for expansion on the same scale.

18 Through this paper, 'other balancing technologies' includes storage, flexible generation, storage and demand-side response.

19 These included surface- and groundwater contamination, water resource depletion, air and noise emissions, land-take, disturbance to biodiversity and impacts related to traffic.

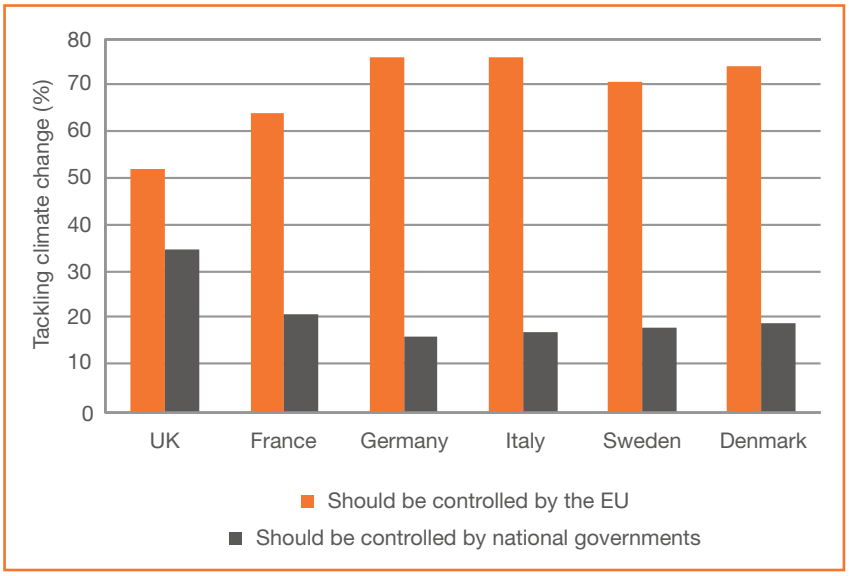
20 For an explanation see http://lexicon.ft.com/Term?term=fracking

2.3 Winning public support

Unlike some areas of European policy, such as immigration or the economy, cooperation on energy attracts significant public support. According to the last European Parliament Eurobarometer on energy, almost 80 per cent of European citizens are in favour of countries sharing energy in the event of shortfalls and 60 per cent of Europeans think they would be better protected through a coordinated European approach to energy policy than by national measures alone (European Parliament 2011).

Similarly, a survey recently carried out by YouGov found that tackling climate change is one of only two policy areas out of 16 where the public in Europe feel that the EU should have a leading role over national governments.[21] As figure 2.2 below shows, there was support for this from over half of those interviewed in each country, from 51 per cent in the UK to 76 per cent in Germany, suggesting that climate change is one of the few areas where the benefits of European cooperation are understood and encouraged.

Figure 2.2
Survey results: who should control action to tackle climate change? (% of respondents)



Source: YouGov/Cambridge 2012
Question: 'Below is a list of specific policy areas. For each one, please say whether you think they should be controlled by the EU as a whole or by national governments each deciding for themselves … Tackling climate change'

However, the slow pace of implementing certain climate goals, backtracking on climate commitments by a number of countries, and the failure of efforts to reform the ETS have all affected Europe's credibility as a global leader on climate change. A climate and energy package for 2030 focused on competitiveness and energy security could help repair this reputation and help get Europe back on track after the economic slowdown. In agreeing an ambitious 2030 package, European leaders should heed the voice of leading business bodies, such as the CBI in the UK, which stress that when it comes to competitiveness there is no trade-off between 'green' and 'growth' (CBI 2013).

21 Other issues included fighting terrorism and international crime, reducing poverty, immigration and military action. Countries surveyed included the UK, France, Germany, Italy, Sweden and Denmark. There was support for this from over half of those interviewed in each country, from 51 per cent in the UK to 76 per cent in Germany, suggesting that climate change is one of the few areas where the benefits of European cooperation are understood and encouraged. A YouGov/Cambridge survey, 24 February – 6 March 2012, sample size: 1,523 GB adults, 1,553 German adults, 1,518 French adults, 1,506 Italian adults, 1,510 Norwegian adults, 1,522 Swedish adults, 1,506 Danish adults (see YouGov/Cambridge 2012).

3. WHY THE UK NEEDS EUROPE FOR AFFORDABLE AND SECURE ENERGY

If European cooperation can boost member states' competitiveness and improve energy security, it follows that the UK should benefit from having a close relationship with its European neighbours on energy policy. The UK Coalition government has set out its support for an ambitious, yet flexible, EU 2030 package to help deliver the EU's goal of limiting global temperature rise to 2°C (DECC 2013).

Negotiations both within the UK and in Europe promise to be far more difficult than during the previous round, in 2005–2007. They will be set against a backdrop of more vocal political opposition to the EU from populist parties across the continent, including the UK Independence party (Ukip) and even some MPs in the Conservative party. The UK's position is somewhat weakened by the possibility of a referendum on the UK's continued membership of the EU if the Conservatives win the next election. Negotiations with Europe also come amid a rise of 'climate denial' in the UK[22] and across Europe, while there is evidence to suggest that public acceptance of climate change and its man-made origins has been on the wane since the high watermark of 2007 in the UK.[23]

3.1 UK competitiveness

Negotiations with Europe on a 2030 package should not simply be seen as a technocratic exercise but as central to the UK's competitiveness and growth agenda. Further integration of Europe's electricity markets will reduce energy costs for UK businesses and consumers, thus reducing inflation, opening the energy market up to greater competition, and offering UK consumers access to cheaper sources of electricity (Barysch 2013, DECC 2012a).

UK political leadership, together with other EU member states, to reform the ETS could result in a higher price for carbon in Europe, stimulating much-needed investment in low-carbon technology and infrastructure in the UK. A Europe-wide carbon floor price would have a strong positive impact on UK competitiveness, eliminating the impact on competeveness of the UK's unilateral carbon floor price.

While some opposition to EU influence on UK energy policy is due to political opposition to UK membership of the EU, many reasonable business and economic commentators believe that the premise of European policy is flawed. They suggest that the UK and Europe will become uncompetitive by 'going it alone' on emissions reductions, since no other country or region is taking climate change seriously.

Few would suggest that a global deal on climate change is not needed to seriously reduce emissions. As Europe is only responsible for 11 per cent of emissions worldwide, it can only achieve so much unilaterally. However, China and the US are investing far more in renewable energy technologies, showing a long-term commitment to decarbonisation that surpasses that of European countries (Ernst & Young 2013). A rise in carbon-pricing schemes around the world – in a number of US states, seven Chinese provinces, Australia and Japan, among others – challenges the claim that Europe is alone in taking climate change seriously (Platt and Straw forthcoming).

22 Many of the most vocal opponents of European energy policy, such as Ukip and Lord Lawson's Global Warming Policy Foundation, are unconvinced that global warming is taking place. This is despite the fact that 97 per cent of scientists accept that climate change is man-made.

23 Ipsos-MORI polling in 2005 showed that 91 per cent believed that the climate was changing, with only 4 per cent saying they did not. By 2010 those saying that the climate was not changing had risen to 15 per cent, with those believing it was changing down to 78 per cent. Populus polling for the BBC showed that the proportion who were not convinced that climate change is man-made rose from 25 per cent in 2009 to 41 per cent in 2010 (See Ipsos-MORI 2010 and Populus 2010).

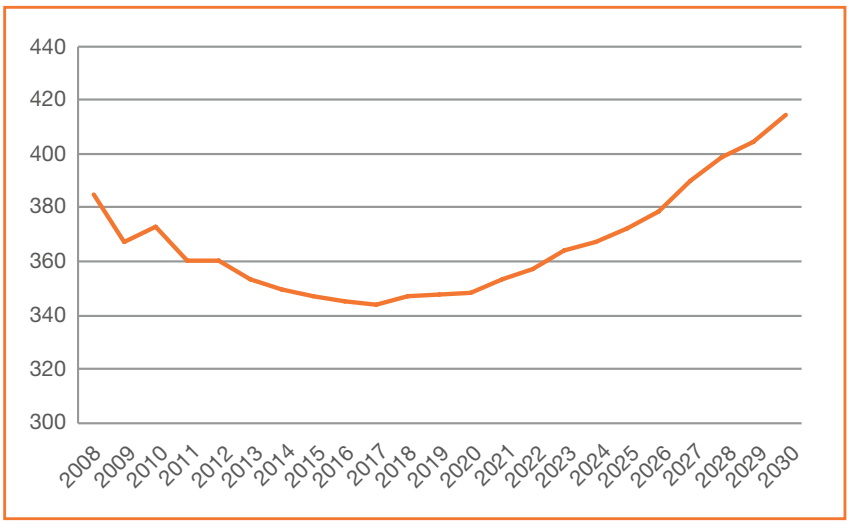
3.2 UK energy security

To improve levels of energy security in the long term, the UK needs to diversify its energy reserves. The UK has become increasingly reliant on imported gas, as production from the North Sea has declined.[24] In comparison to many other European countries, the UK has well-developed import infrastructure and imports gas from a range of places. However, this still carries risks, including the potential for unrest in the Middle East to interrupt liquefied natural gas imports from Qatar (the UK's the main source) and vulnerability to gas price spikes (Bradshaw 2012). Reducing reliance on fossil fuels by investing in energy efficiency and low-carbon energy, as well as greater interconnection, could lessen the impact on UK output from oil and gas price demand and supply shocks by around 60 per cent in 2050 (Oxford Economics 2011).[25]

The more immediate risk facing the UK, however, lies in ensuring the UK has an adequate supply of energy over the next few years. The key responsibility of any government when it comes to energy policy is to 'keep the lights on' and ensure that energy bills are as affordable as possible. Any perception that the government has neglected its responsibility to do either could be politically damaging.

Ofgem has warned that the UK will see electricity capacity margins[26] drop from around 14 per cent in 2012 to 4 per cent in 2015/16. This is because Britain is replacing ageing infrastructure and retiring old fossil fuel power stations to make way for new low-carbon wind and biomass generation. The UK will lose 12GW of coal generation by 2016 and 7GW of nuclear capacity by 2020 (Buchan 2012). The government's own figures suggest that UK electricity generation will fall from 385TWh in 2008 to 344TWh in 2017 before rising again (DECC 2012).

Figure 3.1
UK electricity generation, actual and projections to 2020 (TWh)



Source: based on DECC 2012

24 The UK imports gas in roughly equal measures from Norway, continental European gas markets and as liquefied natural gas.

25 This scenario assumes that oil demand is reduced by 10 per cent of 2010 levels by 2020 and 50 per cent by 2050, gas demand by 20 per cent by 2020 and 70 per cent by 2050, and coal demand by 50 per cent by 2020 and 90 per cent by 2050. It is assumed that these reductions in energy demand are achieved through improved energy efficiency across sectors rather than lower output.

26 Electricity capacity margins indicate the amount of spare generation capacity in the system.

As a result, Ofgem has warned that the UK could face an energy shortfall of 3,400MWh in 2015/16 –equivalent to the power needed to run 1,000 households (although in extreme circumstances up to 9,000 households could be affected in) (Ofgem 2012). As a result of this so-called 'capacity crunch', Ofgem puts the odds of network operator National Grid having to cut power to its customers at one in 12 in 2015/16.

Any shortfall would put the UK at risk of greater reliance on high and volatile gas prices. For example, when UK spare capacity ran low during unseasonably cold periods in late winter/early spring 2012/13, more expensive oil plant was run on five days. Some have argued that as UK economic activity is unlikely to reach pre-2008 levels for another 20 years, demand for power will not be as great as Ofgem suggests (Bloomberg NEF 2012). While this may prove to be the case, government needs to plan for the eventuality that such shortages could occur.

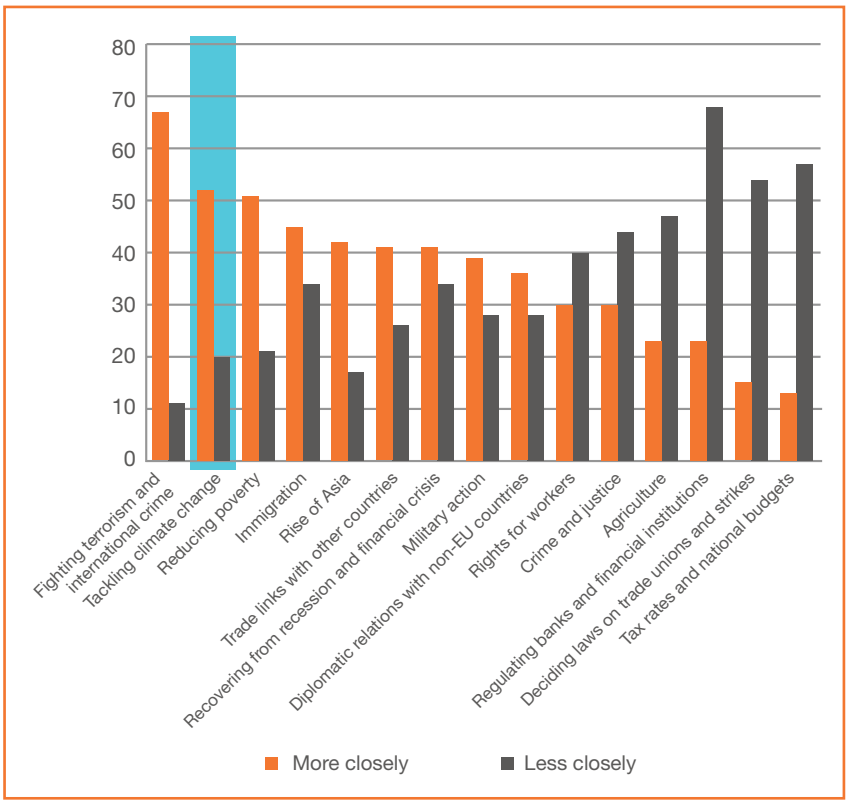
In section 5, we show why high priority should be given to interconnection, alongside other balancing technologies, in guaranteeing the UK's security of supply. Ofgem does not currently include the UK's interconnectors (either existing or planned) in its projection of the UK's electricity capacity, thereby underplaying the role interconnection can play in the UK's security of supply. Ofgem cautions against relying on interconnection with other countries to maintain security of supply, highlighting concerns about the electricity capacity of neighbouring European countries. Our analysis of past performance shows that UK and international connectors are highly reliable, even at times of high demand.

3.3 Winning public support

As we have seen (section 2.3), support for more European cooperation on energy and climate change is strong in the UK and on the continent. In the UK, when asked whether countries in Europe should cooperate more closely on climate change or handle the issue at the national level, 51 per cent of respondents answered 'more closely' while 20 per cent said 'less closely', as figure 3.2 shows (YouGov/Cambridge 2012).

Yet public opposition is one of the biggest obstacles to the expansion and modernisation of Europe's grid infrastructure. Many developments on mainland Europe are opposed on environmental and health grounds, causing significant delays. This was the case, for example, with a recent trans-Pyrenees grid expansion between Spain and France (Tindale 2012). If the UK is to reap the benefits of the single energy market and greater electricity links with Europe, politicians will need to explain why going down this route is in Britain's interests. At a time when trust in Europe's institutions is at a low point, UK political leaders will need to think carefully about how to convince the public that the UK's self-interest is not distinct from Europe's shared interest.

Figure 3.2
Survey results: European cooperation on key issues (% of respondents)



Source: YouGov/Cambridge 2012
Question: 'Should countries in Europe cooperate more closely together, or loosen their links and handle the issue more at the national level?'

4. PRIORITIES FOR COOPERATION ON ENERGY POLICY

We have argued that a trio of economic and political challenges will form the backdrop to 2030 negotiations – economic unease, a crisis of trust in European institutions, and a rise in climate scepticism. European leaders should respond to this by crafting an energy policy agenda that places competitiveness and security of supply at its centre. For this reason, two of the most important priorities for a policy framework up to 2030 should be the single energy market and infrastructure, specifically grid interconnection.

Succeeding in both of these policy areas can help to offer a better deal for consumers and businesses on their electricity use and to improve Europe's levels of energy security. However, they are among the most controversial issues, because they require long-term planning and cooperation among member states and touch on concerns about EC power at the expense of national sovereignty. We briefly set out these tensions below and suggest how policymakers could respond.

4.1 The single energy market

Since the 1990s, Europe has followed the UK's lead in liberalising its energy markets and opening them up to competition in order to force down prices. After some failed efforts, more progress has been made following the adoption of the third energy package in 2009. However, national capacity schemes being developed to subsidise the development of low-carbon energy[27] across Europe could compromise the development of the European market.

Countries including the UK, France, Spain and Italy have all established capacity mechanisms designed to ensure sufficient capacity is available to meet demand during the shift to low-carbon energy. However, national support schemes that guarantee support levels and do not allow cross-border trade for renewables can restrict the free play of Europe's energy markets. The German *Energiewende* has raised concerns in this respect and the UK's electricity market reforms are also likely to do so.

The EC has said that countries should seek 'cross-border solutions to any problems they find before planning to intervene' in their national markets.[28] By this it means that countries should use electricity traded with other countries to address any generation shortages. However, levels of interconnection are not yet sufficiently strong in every case to allow for this, and there can be reluctance to rely on other countries to secure supply, despite the advantages of doing so.

Guidelines from EU energy commissioner Gunther Oettinger on national capacity schemes are expected to address these tensions. This should include examining how capacity schemes across Europe can be made more compatible. Without this, it is even less likely that the single energy market will be completed by the target date of 2014. However, as a first step, capacity mechanisms, including in the UK, should at least give equal priority to interconnection, electricity storage and demand-side responses as a means to ensure security of supply.

27 Renewable energy can be operated at close to zero operating costs, weakening the business case for conventional fuels. However, because renewable energy is variable, back-up capacity is needed, so capacity mechanisms reward companies and investors for maintaining generation capacity which would otherwise be economically unviable (see Buchan 2012).

28 See http://ec.europa.eu/energy/gas_electricity/doc/20121115_iem_0663_en.pdf

4.2 Smarter infrastructure

Now is the best and the cheapest time for the EU to be investing in infrastructure (IEA 2011). The need for record levels of investment in energy infrastructure coincides with a time of near-record private sector balances (Zenghelis 2012). The European Commission has recognised this (European Council 2013). However, the policy certainty needed to unlock investment is lacking. For this reason, infrastructure needs to be a key focus of the EU 2030 climate and energy framework.

A number of priority electricity infrastructure projects for investment have been identified by the EC.[29] However, some countries disagree that in a liberalised energy market the public sector should need to make infrastructure investments. There are also disagreements about which projects should be prioritised (Fischer and Geden 2013). One solution that has been put forward to speed up the process of constructing new energy infrastructure is to reduce the number of priority projects from 12 to five, focusing on projects that are absolutely necessary for the completion of the single energy market (Tindale 2012).This could ensure they are treated with the necessary urgency and priority.

In light of the importance of interconnection for the completion of the single energy market and for accommodating renewable energy onto the energy system, the next chapter examines the prospects for greater interconnection in Europe and the UK and the opportunities and challenges it presents.

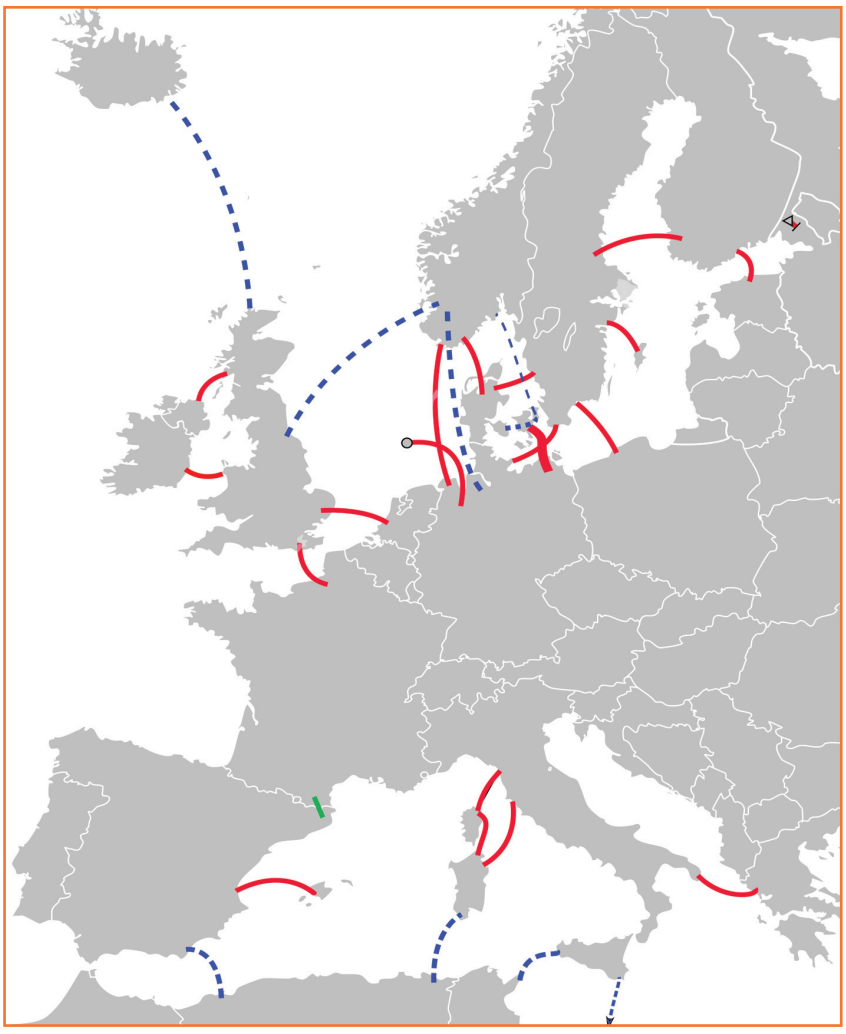
29 See page 13: http://ec.europa.eu/transport/themes/infrastructure/connecting/doc/connecting/2012-10-02-cef-brochure.pdf

5. CONNECTING EUROPE

Since the liberalisation of Europe's electricity markets in the late 1990s, cross-border electricity connections are no longer used only in the case of power shortages but also to allow for trade in electricity. As a result, national electricity networks have opened up, allowing consumers to buy electricity where it is cheapest and most easily available, while producers are able to supply electricity across a range of domestic markets.

However, further interconnection is needed to complete the single energy market. In 2002, the EC set an informal target for member states to secure 10 per cent of their electricity capacity through interconnection by 2005. In 2010, nine member states still had not met this target, including the UK (ECCC 2011). Intuitively, it is island countries and peninsulas such as the Baltic states, Iberian peninsula, UK and Ireland that remain the most isolated countries (European Commission 2012). Figure 5.1 below shows existing interconnectors, those under construction and those that are planned.

Figure 5.1
High-voltage direct current systems in Europe (updated 2013)

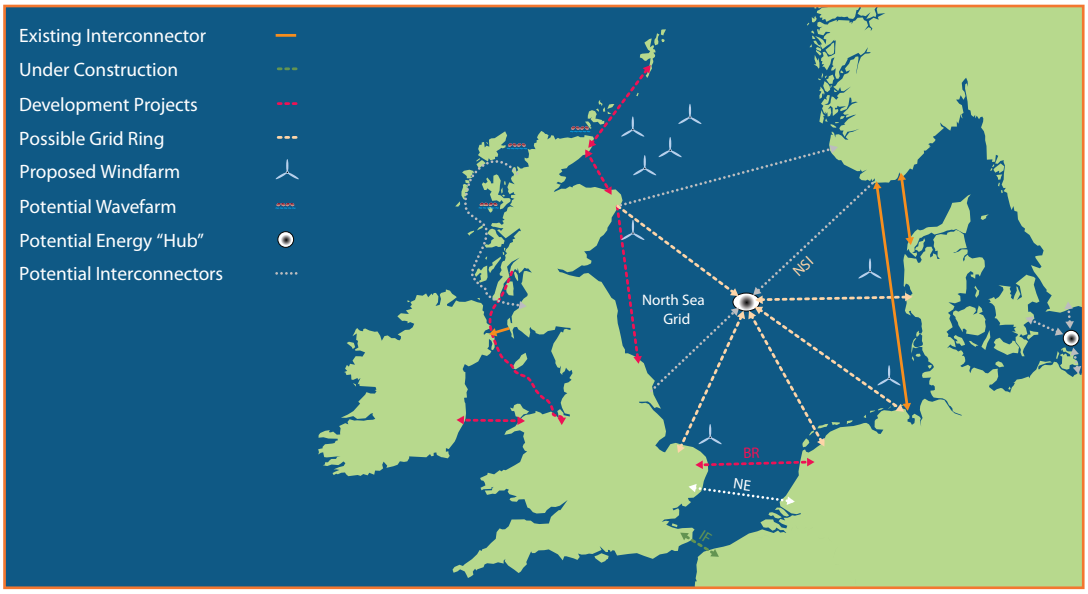


Key: Red = Existing links, Green = Under construction, Blue = Proposed
Source: Wikimedia Commons[30]

30 See http://en.wikipedia.org/wiki/File:HVDC_Europe.svg

Interconnection is currently largely driven through commercial, market-led investments rather than any blueprint for a European 'supergrid'. However, if Europe is to realise the benefits of interconnection (as set out below) governments will need to play an increasingly active role in planning its development. In the case of the proposed 'North Seas offshore grid' – one of the building blocks for an eventual pan-European supergrid (see figure 5.2 below) – public investment for several early projects will be needed within the next five years to prove technologies and test regulatory arrangements as part of a phased development of the grid up to 2030 (Gaventa et al 2012).

Figure 5.2
Post-2020 North Seas offshore grid



Source: Scottish Government[31]

National coordination of offshore wind projects, including clustering these into hubs, would also be needed, where viable (ibid). Putting these steps in place will require renewed political commitment at both the European and national levels.

5.1 Opportunities and challenges

As we have seen, well-integrated energy markets are crucially important for Europe's security of supply. They allow member states to share resources and get the most out of the diversity of national energy supplies, flexibility of demand and spare capacity. Increasing interconnection in Europe also presents a number of other opportunities.

Price reduction

There are significant uncertainties in predicting future energy prices, demand and cost estimates for offshore grids, so it is difficult to present a definitive estimate of the impact of greater European interconnection on energy prices. However, a study of the North Seas offshore grid has attempted to establish what the impact could be on consumers and electricity generators across Europe.

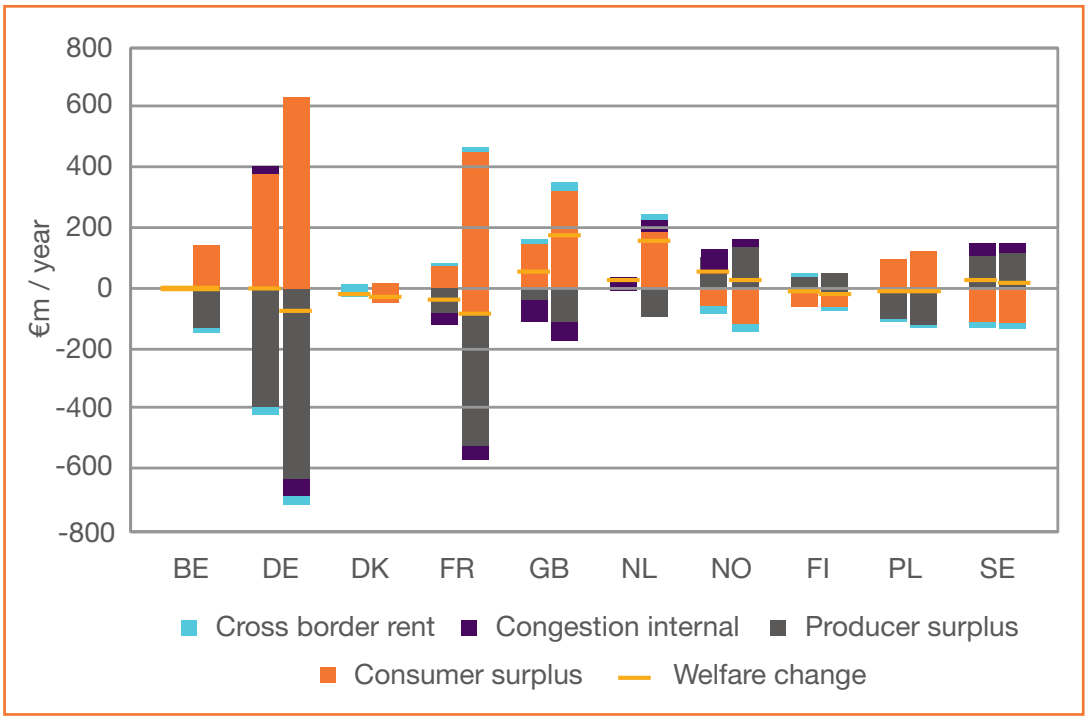
This study shows that although there are overall economic gains resulting from the development of the grid, at the national level there are winners and losers. Figure 5.3 compares the distributional impacts, both in terms of nationwide effects and the

31 See http://www.scotland.gov.uk/Publications/2009/06/12095255/1

distribution of benefits between electricity generators and consumers, based on two different grid designs.[32]

It shows that as a net importing country with high energy prices, the UK is among a number of countries that stand to gain from offshore grid expansion and interconnection. As prices converge across the region, consumers from high-price countries like the UK and France have the most to gain. Savings for UK consumers would come to more than £200 million pounds annually. However, prices will also rise in low-price areas such as Scandinavia, disadvantaging consumers but benefitting generators. The study concludes that a 'meshed grid scenario',[33] is preferable to the other scenarios examined as it shows high benefits even without additional wind capacity and justifies the increased investment costs by the additional economic gains.

Figure 5.3
Redistribution of rents with trade scenario (left within each nation) and meshed scenario (right)



Source: von Hirshhausen 2011

In the UK, the Department for Energy and Climate Change (DECC) has argued that, despite the uncertainties involved in calculating the costs and benefits, interconnection has the potential to reduce the total cost of the UK's electricity system. Research carried out for DECC has shown that although interconnection may mean higher prices at certain points of the year, and lower prices at others, the overall reductions in system costs described above should more than offset these occasional higher prices (DECC 2012b).

32 The study examines several different scenarios for the development of the North Seas grid. The first scenario, the 'radial scenario', includes clustered offshore wind integration at national level. The second, the 'trade scenario', includes the offshore wind integration of the radial scenario and in addition, the capacity of connectors is expanded with new lines needed to complete the single European market. The third, the 'meshed scenario', assumes a combined wind and market integration approach leading to meshed elements in the North Seas grid. See von Hirschhausen 2011 for more information.

33 This involves greater interconnection between countries than a trade or radial scenario. See von Hirschhausen 2011 for more information.

Job creation and economic growth

As with other large infrastructure projects, the building of new power lines and power plants to feed them will typically result in significant short-term employment for construction workers and engineers, and create indirect jobs and stimulate economic activity in the area where the infrastructure is being built. A recent study for the EC found that under a 'high renewables' scenario, investment in new electricity infrastructure would lead to a rise in economic activity as demand in sectors such as construction and engineering increases. The study found a 0.05 per cent increase in GDP for the UK by 2020 and a 0.41 increase in investment (Kema et al 2010).

A recent study found that the UK's large offshore wind resources have the potential to contribute £5.1 billion to the UK's GDP by 2020, through direct effects as well as throughout the supply chain and foreign trade. This is predicted to generate the equivalent of 100,000 full-time jobs by 2020 (CEBR 2012). The high-voltage direct current industry required to facilitate grid expansion is also well established in the UK, offering a chance to benefit from a first-mover advantage (PWC 2013). Overall, however, the evidence base on job creation and economic growth resulting from electricity infrastructure, particularly interconnection, is still limited and needs to be expanded.

Rapid and cost-effective decarbonisation

It becomes more economic to invest in renewable generation capacity when there are high levels of interconnection with Europe. Developing offshore wind could be as much as 20 per cent more expensive without EU interconnection and coordinated grid arrangements (European Commission 2012a). For example, ENTSO-E estimates that investment costs of €7 billion (or 10 per cent) could be saved through developing an integrated offshore grid, compared to a continuation of national solutions (ENTSO-E 2011). The recent Offshore Grid Study estimated that investment costs of €14 billion could be saved through clustering wind farms in hubs rather than connecting radially to shore (Offshore Grid Study 2011). It also identified a total of €16–€21 billion of savings due to reduced electricity generation costs over 25 years.

More trade, less import dependence

The UK has the largest offshore resources in Europe, with the greatest installed capacity of any European country. The potential trading benefits of greater interconnection are significant. By using just under a third of its offshore resources, the UK could be transformed from a net importer to a net exporter of electricity by 2050.[34] Research commissioned by the UK government shows that higher levels of European interconnection would allow the UK to export to countries that have a higher electricity price and import electricity from countries with a cheaper price (Nind et al 2011).

The National Grid has identified significant increases in exports and reductions in imports by 2030 as a result of interconnection. In its central 'future energy scenario', the National Grid expects UK exports to increase markedly from towards the end of this decade as interconnection capacity increases to 8.6GW by 2030 and renewable generation increases, so that the UK becomes a net exporter to the continent by the early 2020s. In National Grid's high future energy scenario, the level of interconnection capacity increases significantly to 11.6GW by 2030. National Grid suggests this would result in GB becoming a net exporter at the end of this decade (National Grid 2012).

34 See http://www.offshorevaluation.org/

Key challenges include:

- the cost of private investment and public financing needed for early investment in projects that would not otherwise be commercially viable
- different interconnection frameworks between different countries and onshore and offshore regulation, which can create uncertainty and increase complexity
- the allocation of transmission charges and the cost of necessary onshore transmission reinforcements for the transit of interconnected generation
- agreeing compensatory mechanisms for low-energy-price countries where consumers could see energy costs rise as a result of greater interconnection.

European cooperation is clearly necessary to realise the opportunities and resolve the challenges associated with interconnection. Particular attention needs to be given to reducing barriers such as regulatory complexity, securing the pooled funds that will be needed for early investment in shared assets[35] and decisions on cost allocation. The EC has proposed a 'beneficiary pays' approach to compensate consumers and producers in countries that could see costs increase. However, it has been suggested that this does not go far enough to equitably allocate costs and that if not resolved this could have the potential to delay developments (see RAP 2011).

The European Climate Foundation (ECF) has argued that the lowest cost route to a decarbonised power sector by 2030 would require twice as much additional grid capacity across Europe as compared to planned expansion in the current decade (ECF 2012). The European Commission has estimated that there is a need for new investment of about €200 billion in transmission lines, interconnectors, storage facilities to facilitate the integration of European energy markets by 2020. There will be an impact on costs for consumers however this is expected to remain limited (about 1 per cent in electricity) and to be offset by the benefits from price convergence, increased security of supply and lower back-up needs as well as higher penetration of renewable (European Commission 2013a).

European political leadership will also be needed to ensure a shared vision is maintained. As the UK's Energy and Climate Change Committee has warned, a strong political lead will be necessary from the UK and other member states to overcome obstacles such as this and to ensure an ambitious, shared vision between member states (ECCC 2011).

5.2 The UK and interconnection

Interconnection already provides a valuable source of flexibility for the UK, which shares almost 4GW of capacity with Ireland, France and the Netherlands. There are plans for at least nine new interconnectors, including with Norway, Ireland, two more to France (one of these through the Channel tunnel) and one to Iceland. By 2020, approximately 6GW of interconnection is planned (DECC 2013a).

A new 'East–West' interconnector, which became operational in December 2012, connects the grids of Wales and Ireland. This gives more security of supply to the Irish and UK grids and allows Ireland and Britain to access more competition. An Anglo-Irish agreement has recently been signed to allow new wind farms in central Ireland to export power to the mainland UK. This includes the *Greenwire* project, a 3MW interconnector between Ireland and Wales that would allow power from a fleet of proposed onshore wind farms in central Ireland to be transmitted to the UK.

35 This is particularly where it is not clear how the 'beneficiary pays' principle will apply, for example in relation to grid interconnections among two or more energy markets.

However, in many respects, the UK remains an 'energy island'. Germany, for example has 17GW of interconnector capacity, in comparison to the UK's 4GW.[36] This means that Germany can call upon supply from countries such as Norway, where hydro can be turned on and off as required, but can also sell its surplus of renewable electricity to others when it is not required for domestic use.

In its electricity capacity assessment, Ofgem acknowledges the benefits being part of a larger and more diverse electricity system in Europe, but highlights concerns at being exposed to risks from the actions of players 'beyond the control of the GB market' (Ofgem 2012). We explore here whether analysis of past performance reflects concerns about the reliability of UK connectors and those of neighbouring countries.

Reliability of UK and international interconnectors

Historically, UK interconnectors have been highly reliable. For example, the UK's Interconnexion France Angleterre connector consistently achieves 93 per cent operational efficiency.[37] It was running at reduced capacity in summer 2011, but this caused no problems for the UK. Summer 2011 saw the Northern Ireland–Great Britain Moyle interconnector fault twice, but the standard for Northern Ireland electricity capacity was met at all times (ENTSO-E 2011a).

There have been very few problems in international experience of interconnectors. Even after the unexpected shutdown of eight nuclear plants in Germany, there were no interruptions in France or other interconnected countries as a result. Germany experienced some stresses on its grid and problems with voltages, but overall was able to deal with these (ENTSO-E 2011a). Italy had problems in 2012 with blackouts, which may in part have been caused by storm damage to an interconnector between France and Switzerland; however, power was restored within a few days.[38]

European electricity capacity

The Ofgem assessment highlights concerns about the level of security of supply in neighbouring countries. Overall, however, the evidence suggests that there should be ample capacity to balance supply and demand including interconnection between European countries up to 2020.

The European network of transmission system operators for electricity (ENTSO-E) produces an annual forecast of electricity capacity across Europe.[39] The ENTSO-E 2013 report finds that there is sufficient electricity generation across Europe until 2020, even after the shutdown of German (and Swiss and Belgian) nuclear power plants. They do foresee a point at which a number of countries might need to import electricity at the same time – the bloc of Belgium, Germany, Czech Republic and Poland, with Germany possibly requiring the greatest level of imports. However, the report finds that the 26GW import capacity available on the external borders of the group would more than cover the additional capacity needed.

36 However, it is also the case that in mainland Europe interconnection takes the form of less expensive overland electricity lines, while on islands like the UK, high-voltage undersea cables must be installed.

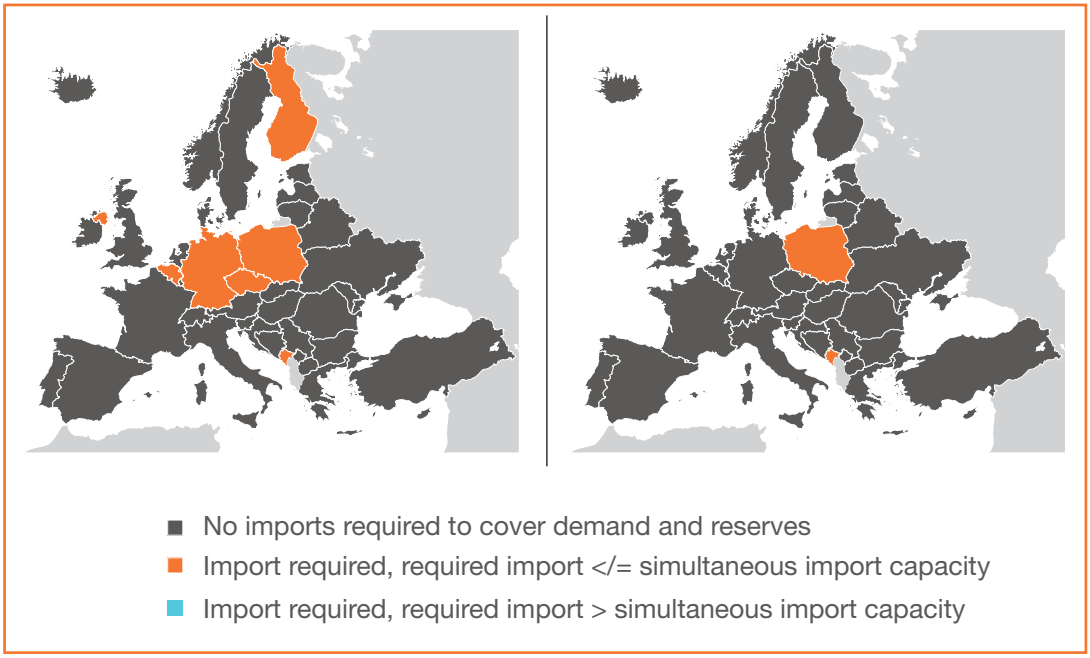
37 See http://www.nationalgrid.com/uk/Interconnectors/France/

38 According to a research interviewee.

39 ENTSO-E is an association of Europe's various transmission system operators and works to ensure coordination of network operation. Their annual scenario outlook and adequacy forecast (SOAF) is based on models run using data supplied by member countries on their capacity and forecasts.

Figure 5.4 below shows those countries in orange as needing imports that can be met by existing interconnector capacities. No countries are coloured as blue, indicating that they require more imports than interconnectors can handle.

Figure 5.4
ENTSO-E regional analysis of demand versus import supply, January (left) and July (right)



Source: Recreated from ENTSO-E 2013

Some concerns are identified in relation to French capacity between 2013 and 2016. These include the fact that combined cycle gas turbine (CCGT) plants could be mothballed due to economic reasons; there is also expected to be a shutdown of more than 7GW of hard coal and oil units and 1–3GW of combined heat and power units (or CHP) are expected to be shut down due to a change in financial incentives. However, if there were to be shortages of supply it is unlikely that this would affect UK interconnectors with France, which have proven to be highly reliable (ENTSO-E 2013).

Implications for UK electricity capacity

Analysis of past performance shows that UK and international connectors are highly reliable, even at times of high demand. On the whole, there is enough capacity to balance supply and demand including interconnection between European countries up to 2020, and only the bloc of countries above is foreseen to need to import electricity at the same time. However, there is enough additional capacity to cover this eventuality, and this bloc doesn't include the countries with which the UK is currently connected: the Netherlands, France and Ireland.

Concerns have been raised about relying on power to flow through interconnectors at times of shortage due to situations when UK price signals 'did not work'.[40] New interconnector capacity allocation network codes should help to sort out the problem of 'adverse flows', as capacity is determined through 'implicit auctions' based on price.

40 For example, see House of Lords EU Select Committee 2013: ch 6, para 192

Furthermore, in using interconnection to balance variable renewable energy it should be possible to forecast needs from interconnectors and to contract for these ahead of time. If the EU's vision of a more integrated electricity market is to be realised, issues like this will need to be overcome through greater cooperation between member states.

The UK has a number of options for dealing with the potential electricity shortfalls outlined in section 3.2:

- increasing capacity – for example, by building more CCGT power plants
- relying on capacity imported from other European electricity networks
- varying the burden on the system through customer demand management (or CDM).

In winter 2012/13, which saw the coldest March since 1963, electricity demand was significantly higher than the normal level for that time of year. As a result, peaks in demand had to be suppressed through CDM, which involves an agreement between the National Grid and large industrial and commercial customers (typically using at least 25MW) whereby they reduce or stop their use of electricity during a period where supply is close to not meeting demand.

In previous years, demand has typically been suppressed by an amount in the region of 700MW. This winter, however, peak demands were regularly suppressed by up to 1,300MW through CDM. This provides one option for handling peaks in demand. However, a payment has to be given to companies for the interruption in their supply.[41]

Nonetheless, building more generation capacity is expensive. As the third option, interconnectors can be built comparatively quickly and make use of a proven technology: the cost of laying undersea cable is well understood by the market. In addition to helping to meet energy shortfalls, interconnection can help to keep the UK's energy system secure. Research commissioned by DECC suggests that it is cheaper to balance variable renewable power through interconnection (as well as other flexible forms of electricity) than by investing in generation capacity such as CCGT (Strbac et al 2012).

Interconnection therefore presents a cost-effective and convenient way of dealing with electricity shortages. In addition, in the long term, it would help to balance variable renewable energy (by aggregating supplies and demands) and also increase overall competition in Europe's electricity market, which could lower prices.

These findings suggest interconnection should be considered as contributing to the UK's security of supply in official capacity estimates. Ofgem concerns about the reliability of UK connectors and those of neighbouring countries appear overly cautious. As well as assessing short-term needs, the UK needs to set out a clear vision for the role interconnection can play in our energy system in the long term. This should include setting out how interconnection, as well as other balancing technologies, will help to balance variable renewable power.

41 Companies either receive payment for the MWh not used (£/MWh) or they can also tender for STOR contracts (short-term operating reserve) whereby they offer a demand reduction (or generation) of 3MW or more. They receive both a utilisation payment for the MWh not used and an availability payment for making themselves available if needed. For more information see http://www.nationalgrid.com/uk/Electricity/Balancing/services/reserveservices/demandmanagement/ and http://www.nationalgrid.com/uk/Electricity/Balancing/services/balanceserv/reserve_serv/stor/

CONCLUSION

A new sense of purpose is needed to encourage growth across the continent and provide renewed legitimacy for European cooperation. Greater energy market integration meets shared goals on improving competitiveness, security of supply and sustainability while increasing trade and job creation. It is, therefore, a prize worth striving for.

If the UK is to reap the benefits of the single energy market and greater electricity connection with Europe, politicians will need to be prepared to explain why this is in Britain's interests. At a time when trust in Europe's institutions is at a low point, UK political leaders should be willing to argue that Britain's self-interest can be served by working in Europe's shared interest.

Greater energy market integration is needed to boost Europe's competitiveness and improve levels of energy security

- A single, interconnected energy market in Europe will reduce energy prices for consumers and businesses and help to accommodate an expansion of renewable energy. However, the construction of electricity connections between countries is not keeping pace with policy ambitions.
- Accelerating the deployment of electricity infrastructure should be a key aim of the EU 2030 climate and energy package. An 'infrastructure target' would help to define the level of transmission and distribution infrastructure needed to realise ambitions for a single energy market. This would need to reflect the different levels of electricity connection appropriate for different member states. EU 2030 negotiators should consider whether a target or alternative mechanism should be adopted for this.
- Capacity mechanisms developed by member states, including the UK, to provide back-up capacity for renewable energy should be modified to ensure interconnection, electricity storage and demand-side responses are able to secure a significant proportion of capacity contracts as a means to ensure security of supply. The 2030 climate and energy package should ensure that capacity mechanisms in Europe are compatible, as far as possible.

The UK needs interconnection with Europe to secure its short-term and long-term energy security

- The UK does not currently rely on electricity connections with Europe to avoid electricity shortfalls. However, given Ofgem warnings of an electricity 'capacity crunch' over the next few years (particularly in 2015/16 and 2016/17) as generation capacity temporarily falls, the UK should reassess this position. Exploiting electricity capacity through interconnectors would avoid the need to build expensive new generation capacity or interrupt energy supplies to industry.
- In the Energy Bill delivery plan, the UK needs to set out clear objectives for the role interconnection will play in the energy system up to and beyond 2020. This should include setting out how interconnection, as well as other balancing technologies, will help to balance variable renewable power and ensure UK security of supply.

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