# ESRI Research Note

***Re-evaluating Irish energy policy in light of Brexit***

Muireann Á. Lynch

# RE-EVALUATING IRISH ENERGY POLICY IN LIGHT OF BREXIT

* Muireann Á. Lynch[1]

## 1. INTRODUCTION

The result of the UK referendum on EU membership has prompted a re-evaluation of many Irish policies with a view to 'Brexit-proofing' them. The areas of energy and climate policy are no different. As things stand, much of Irish energy and climate policy is shaped at EU level, and so the UK leaving the EU would have implications for Irish policy irrespective of the strong ties between the Irish and UK energy systems. Re-evaluation of Irish energy policy in light of Brexit is therefore understandable and advisable. However, many issues facing Irish, and indeed EU, energy and climate policy are independent of Brexit, and should not be neglected in the public debate. This paper briefly examines some of these issues, with a particular view as to whether and how the policy context has changed in light of Brexit.

## 2. IMPLICATIONS OF BREXIT FOR ENERGY POLICY

### 2.1 Electricity market membership and participation

One of the main effects of Brexit on energy policy is an increase in uncertainty, particularly surrounding the future of energy market structures. An all-island single electricity market (SEM) has existed in Ireland since 2007 (Barrett et al., 2015) and the SEM is part of the wider EU Internal Market for Electricity, as is the electricity market in Great Britain (European Commission, 2009). The SEM is currently undergoing a significant redesign (Di Cosmo and Lynch, 2016) in order to comply with European regulations on electricity market design. At an institutional level, the Irish Transmission System Operator participates in the European Network of Transmission System Operators for Electricity (ENTSO-E)[2] and the regulators North and South participate in the Agency for the Cooperation of Energy Regulators (ACER) (Everis and Mercados, 2010). The SEM is underpinned by legislation in Ireland and Northern Ireland that was enacted under the framework of the 2006 Memorandum of Understanding between the Governments of Ireland and the United Kingdom (Barrett et al., 2015). Therefore its existence should not automatically be called into question as a result of Brexit,

[1] Lynch acknowledges funding from the Energy Policy Research Centre as well as helpful comments and suggestions from Mel Devine, John FitzGerald, Valeria Di Cosmo, Valentin Bertsch and members of the EPRC.

[2] See www.entsoe.eu/about-entso-e/inside-entso-e/member-companies/Pages/default.aspx.

* Muireann.Lynch@esri.ie

although the legislation will have to be revised as it is currently framed in the context of the EU Internal Energy Market. Indeed, the UK and Irish governments have confirmed that the SEM should be maintained in Brexit negotiations (Department for Exiting the European Union, 2017; Irish Government, 2017).

The consequences of any disruption to the SEM would have implications for both consumers and producers, particularly in terms of costs. Should Northern Ireland cease to participate in the SEM, the market would serve a smaller number of consumers, and some economies of scale would be lost. There would be a reduction in the number of players in both generation and supply markets, and this would lead to a reduction in competition. This reduction in competition would impose extra regulatory burdens and could also lead to an increase in prices. The Moyle interconnector, which runs from Northern Ireland to Scotland, would no longer connect directly to the SEM, bringing further implications for efficiency and competition. There could also be increases in the costs of integrating variable renewable generation, such as wind generation, as there would be more barriers to exporting electricity at times of high wind and importing electricity at times of low wind. In general the SEM has been a success in increasing efficiency and decreasing costs for consumers (Gorecki, 2013) and so the maintenance of the SEM post-Brexit should be a top priority for policymakers. It should be noted however that given the strong commitment by Irish, UK and EU officials to the maintenance of the SEM the probability of the SEM being disrupted or dismantled is low.

It is certainly possible that the electricity market of Great Britain (BETTA) will continue to participate in the European electricity market post-Brexit, and this is also desirable both from an Irish and a European perspective. Great Britain currently has electricity interconnection to France and the Netherlands, as well as Ireland, and more interconnection to Norway is planned. The UK therefore has an incentive to remain integrated with the EU market in order to use these existing and planned interconnectors to their full potential. Electricity trading currently takes place between EU and non-EU countries, for example between Russia and Finland and the Baltics. Furthermore there are currently two examples of non-EU electricity markets that participate in the European electricity market (Pollitt, 2017) and their experience is instructive. Norway is fully integrated into the EU market through its membership of the European Economic Area (EEA) and of the European Free Trade Area. Switzerland, in contrast, is fully physically integrated into the EU market but does not participate fully in the market following the failure of the Swiss referendum on freedom of movement in 2014. In particular, Swiss energy companies are restricted in their rights to participate in EU energy markets, while Norwegian energy companies do not face such a restriction.

Neither the Norwegian nor the Swiss regulators are members of ACER[3] but both their Transmission System Operators participate in ENTSO-E.

Drawing on the Swiss experience, Great Britain's continued full participation in the European electricity market is not guaranteed, especially considering the fact that the physical links between the British and European electricity markets are much weaker than in the Swiss case. As Great Britain is the only electricity market that is physically linked to the SEM there could be implications for the ease with which the SEM participates in the EU electricity market should Great Britain cease to be a full participant. In particular, without common rules for the trading of electricity over interconnectors, there is potential for perverse interconnection flows, where electricity flows from the expensive region to the cheaper region, rather than the other way around. Ending such perverse flows is a major aim of the European electricity market (European Commission, 2009a). Even in the absence of tariffs over interconnectors, if the timing of the purchase and sale of electricity over interconnectors is not aligned across markets, this can lead to suboptimal usage and means the markets will not be properly linked.

It should be noted that the UK is likely to remain a member of both the European gas and electricity markets, but not guaranteed. It is however unlikely that the UK will remain a member of the electricity market but not the gas market, or vice versa. Ireland and the UK are both net energy importers, and so unlike other forms of trade, there is a clear common interest in maintaining the status quo – it is not a case of there being winners and losers should the UK leave the European energy markets. However the UK remaining as part of the European internal energy market is not guaranteed and clarity regarding the UK's future participation in European energy markets would be helpful for all parties. In particular, the future shape of the UK's involvement, and whether they are 'rule takers' or 'rule makers', would have implications for Irish energy policy. Should the UK fail to remain a member of EU energy markets, World Trade Organisation regulations on the trade of energy would apply.

## 2.2 Interconnection and market integration

The degree to which the electricity systems in Ireland and Great Britain are physically integrated with each other and with the electricity systems in mainland Europe by means of interconnection is important in determining market integration (Gorecki, 2013). EirGrid, along with the French TSO RTÉ, is currently exploring the possibility of an electricity interconnector between Ireland and

[3] The Norwegian regulator is a member of the Council of European Energy Regulators (CEER), a Belgian not-for-profit association established for the cooperation of independent energy regulators in Europe. See www.ceer.eu.

France.[4] Should BETTA, the electricity market in Great Britain, leave the European internal electricity market, this link would provide the only means of Ireland having a direct physical link to the EU electricity market and therefore may appear as an attractive proposition. The European Council has called for total interconnection capacity of 10 per cent of the installed capacity to be present in each Member State. All of Ireland's interconnection is currently to Great Britain and so post-Brexit, Ireland's interconnection to another EU Member State will be zero. In spite of this, a new interconnector to France should only proceed if it enhances welfare in Ireland and France, as Irish and French consumers will ultimately pay for the investment. As a Project of Common Interest, the project would qualify for an EU subsidy, and so the entire cost of the project would not fall on Irish and French consumers. Welfare can be enhanced by decreasing electricity costs and/or prices, but there is also the potential for non-monetary benefits, including reduced uncertainty surrounding electricity prices or increased security of electricity supply. The impacts of interconnection are difficult to accurately quantify and so there should be a clear net benefit before this, or indeed any, infrastructural project is approved. If there is no clear net benefit Ireland should instead argue for an exemption from any requirement to have a given level of interconnection with another EU Member State rather than pursue suboptimal interconnection to France or elsewhere.

Ideally, the determining factor when trading electricity over interconnectors would be the relative price of electricity[5] which would include the carbon price. Carbon emissions from the electricity sector are priced as part of the EU Emissions Trading System (ETS). The carbon price arising from the ETS is much lower than anticipated and the system arguably requires reform (Cameron and Teytelboym, 2017). This low price for carbon provided the impetus for the UK's implementation of a carbon price floor in 2013.[6] As a result, electricity generated in Great Britain has a different carbon price to electricity generated elsewhere in the EU. EU trading rules currently preclude Britain from taxing electricity imports according to their carbon content. However, should Great Britain leave the EU single market for electricity, they may attempt to impose tariffs on imported electricity according to the carbon content of the electricity generated in the exporting country. Pollitt (2017) argues that such a strategy may be desirable to UK policymakers in order to remove the incentive to invest in interconnection between Great Britain and other European countries purely for the purposes of taxation arbitrage. At times of high wind, Ireland has exported electricity to Great

4 See www.eirgridgroup.com/the-grid/projects/celtic-interconnector/the-project.

5 In practice perverse flows exist over many interconnectors in Europe, see www.eprg.group.cam.ac.uk/wp-content/uploads/2015/07/2a-Newbery.pdf.

6 See the UK Climate Change Act, in particular Statutory Instrument 2013/713.

Britain in order to avoid curtailing[7] this electricity. The carbon content of this electricity is zero, and so under a regime in which electricity exports to Great Britain were taxed according to their carbon content would have a competitive advantage compared to electricity generated from fossil fuels in France,[8] Belgium or the Netherlands. This would lead to higher electricity exports from Ireland which could in turn raise prices in Ireland.[9] In general, any changes to electricity trading undertaken by the UK outside of the IEM have the potential to have consequences for Ireland. The particular effects on consumers and generators would depend on the particular changes that occur.

## 2.3 Renewable energy policy in the UK

In recent years the environmental impact of energy supply has emerged as a specific consideration of energy policy. The UK has been a main driver of EU climate policy (Cameron and Teytelboym, 2017) and indeed can be seen to have gone beyond the requirements of EU climate policy by implementing a carbon price floor in response to the low carbon price emerging from the EU ETS. The future of UK climate policy following Brexit is unclear however, particularly given the current political climate. In particular, the UK may choose to abandon specific targets for renewable energy and may pursue carbon emission reduction through other means (Pollitt, 2017), if at all. This would have implications primarily for the all-island electricity market if there is a lower level of renewable electricity generation in Northern Ireland relative to the Republic. Renewable generation depresses wholesale electricity prices and also increases the costs associated with accommodating higher levels of renewable electricity. Di Cosmo and Malaguzzi Valeri (2017) find that from 2008 to 2012 the reduction in prices was greater than the increase in the costs of accommodating the renewable electricity. As the amount of renewable electricity increases to 40 per cent of demand and beyond, the relative magnitudes of these effects may change. Consumers North and South will therefore experience the same net effect of renewable generation on their bills, even if the levels of renewable generation in each jurisdiction (and the associated subsidies) diverge.

In general, divergence of energy polices between Northern Ireland and Ireland could put strains in the SEM and ISEM. It is in part for this reason, for example, that the carbon price floor was not implemented in Northern Ireland. Policymakers have an incentive to maintain broad agreement between renewable

7 Curtailment of renewable electricity is where the electricity is not used on the system but is in effect wasted as the electricity demand at the time is not of a sufficient magnitude or flexibility to accommodate the renewable generation.

8 The majority of French electricity is generated by nuclear; however the marginal generator is the generator of interest.

9 Higher prices in the energy market could in turn reduce capacity prices in the new capacity market but only if the market is sufficiently competitive. The new capacity market is as yet untested.

policy in the North and South even if the UK as a whole pursues a different level of renewable generation post-Brexit.

### 2.4 Security of gas supply

Much of the discussion regarding the impact of Brexit on energy has focused on supply security. This is primarily due to the fact that Ireland is heavily dependent on gas supplies via Great Britain. While the Corrib field met 55 per cent of demand in its first year of operation, the Moffat link with Great Britain is expected to be re-established as the dominant gas supply point from as early as 2018 onwards (Gas Networks Ireland, 2016). Great Britain has a more diversified gas supply, sourcing gas through imports via Norway, Belgium and the Netherlands, as well as Liquefied Natural Gas (LNG) imports (mainly from Qatar).[10] Gas is an important fuel in Ireland both for heating and for electricity generation, and has the advantage of being relatively low in carbon emissions. Ireland currently has three sources of gas supply; a gas pipeline from Moffat in Scotland, the Kinsale field and the Corrib gas field, although the contribution from Kinsale is almost negligible at this stage (Gas Networks Ireland, 2016). Corrib and Kinsale are not in a position to meet all of Ireland's annual gas demand and so Ireland will continue to rely on gas via Great Britain for the foreseeable future. Furthermore, Kinsale is expected to cease production by 2020/2021 while Corrib production is projected to decrease to 50 per cent of its initial levels by 2025.

EU regulations currently prevent individual Member States interrupting energy supplies to other Member States should an energy crisis emerge (European Commission, 2010) and new stronger regulations are currently in preparation (European Commission, 2016). The new regulations include details concerning the technical calculation of gas supply security both at national and regional level. In an EU context, Ireland and the UK are considered to be one region for the purposes of gas security. Negotiations surrounding the new stronger regulations are ongoing and the regulations themselves are subject to change. However, in their current form, Ireland may thus find itself as an isolated energy 'region' within the EU post-Brexit[11] and may therefore require exemptions from some EU regulations concerning security of energy supply at regional level.

Ireland and the UK have separate intergovernmental agreements from 1993 and 2003 on sharing gas supplies which may remain in place even if the UK is no

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10 www.gov.uk/government/statistics/digest-of-united-kingdom-energy-statistics-dukes-2016-main-chapters-and-annexes.

11 In contrast to the case of electricity, there is no precedent for non-EU countries participating as full members of the EU gas market. Neither Switzerland nor Norway forms part of any of the EU regions with respect to gas markets, and their gas TSOs are observers rather than full members of ENTSO-G. Thus if Great Britain were to remain a fully integrated member of the EU gas market it would be a departure from current norms and it is more likely that Ireland will be an isolated 'region'.

longer subject to EU requirements on energy supplies.[12,13] These agreements, coupled with the fact that it is impossible to cut supply to the Republic of Ireland without simultaneously cutting supply to Northern Ireland, may temper fears of supply interruptions in the unlikely event of an energy emergency. The impact of Brexit on the probability of gas supply interruptions is therefore probably small but is not non-existent and so the context for policy decisions relating to energy security can be said to have changed slightly due to Brexit.

The possibility of importing Liquefied Natural Gas (LNG) is an obvious means of diversifying gas supply. LNG has an advantage over new pipelines as the gas can be imported in liquid form from many different gas markets worldwide. The LNG project in County Kerry has planning permission but currently is not being developed (Gas Networks Ireland, 2016). A Floating Storage and Regasification Unit (FSRU)[14] is an alternative means of importing LNG. Increased gas imports from LNG also allow for the possibility of exporting gas to Great Britain should it prove profitable to do so.

Investing in more gas storage is another measure that can be taken to increase the security of energy supplies in Ireland. A cheaper alternative to gas storage is increasing storage of distillate. Gas fired power plants can be run on distillate, and so increased distillate storage would reduce the probability of electricity shortages should there be an interruption to gas supplies. EU regulations currently require Member States to store 90 days' worth of average daily imports, or 61 days of oil consumption, within the EU to mitigate against supply uncertainty (European Commission, 2009). Ireland currently stores part of its required oil allocation in the UK. Post-Brexit these stores will obviously no longer be situated within the EU and so Ireland may require an exemption from this Directive. Finally the possibility of increased domestic production of gas would also obviously enhance the security of Ireland's energy supply.

The impacts of any such measures to enhance security of supply on the domestic gas market, and the consequent net benefit, are unknown, and research in this area should be prioritised. A project such as an LNG terminal would be privately owned infrastructure and so the investment decision is a commercial one. On the other hand, requirements regarding distillate back-up in order to generate

12 treaties.fco.gov.uk/docs/fullnames/pdf/1993/TS0073%20(1993)%20CM-2377%201993%2030%20APR,%20DUBLIN%3B%20AGREEMENT%20BETWEEN%20GOV%20OF%20UK,%20NI%20&%20IRELAND%20RELATING%20TO%20TRANSMISSION%20OF%20NATURAL%20GAS%20BY%20PIPELINE.pdf.

13 www.dfa.ie/media/dfa/alldfawebsitemedia/treatyseries/uploads/documents/legaldivisiondocuments/treatyseries2007/no-19-of-2007.pdf.

14 A FRSU is a special type of ship that can both transit and regasify LNG. Importing gas via this emerging technology does not require an onshore regasification unit, in contrast to the proposed LNG facility in County Kerry.

electricity can be imposed on generation firms by the regulatory authorities. In general, significant infrastructural investment decisions of any type should be justified on the basis of a thorough cost-benefit analysis and should not be taken on the basis of the (real or perceived) threats of Brexit.

## 3. FURTHER DISCUSSION ON ENERGY POLICY IN IRELAND

The above is a summary of the areas of energy policy that may be impacted by Brexit. In addition, however, it is prudent to re-evaluate energy policy in general at regular intervals, particularly as new research sheds light on energy policy objectives and outcomes. In this spirit, the remainder of this paper outlines the main areas of concern surrounding energy policy that are largely unchanged as a result of the Brexit vote, but which are no less important.

### 3.1 Techno-economic rationale of energy policy

In order to minimise energy costs, it is imperative that Ireland's energy policy strategies are informed by sound techno-economic analysis. To date, much of Irish energy policy has focused on a mix of objectives, including cost reduction, energy poverty considerations, supply security, emissions reduction, efficiency targets, renewable targets, research and development goals and job creation and retention (see for example DCENR, 2015). This mix of objectives leads to overly-costly energy policy, except of course in the case where the differentiated objectives and targets perfectly align with those that would arise under the least-cost policy pathway. Once the objectives of energy policy have been determined, the optimal pathway to meeting those objectives, taking into account the preferences and priorities of the Irish people, should be identified and pursued.

Some of the inconsistencies and extra costs of Irish energy policy, such as dividing carbon emissions between the ETS sector and the non-ETS sector, have their roots in EU regulations. The EU has been to the forefront in combating carbon emissions but has done so through a mix of targets for carbon reduction, energy efficiency and renewable energy (European Commission, 2009b), all to be achieved by the year 2020. Within the renewable energy sector there are also differentiated national targets for total renewable energy along with a separate target for renewable energy in transport. The EU is shaping future energy policy for 2030 and beyond[15] as part of the Clean Energy Package.[16] The package is subject to ongoing negotiation. Current proposals involve an overall EU target of 27 per cent of total energy to be met by renewable energy, but no differentiated

[15] See ec.europa.eu/clima/policies/strategies/2030_en.

[16] See eur-lex.europa.eu/resource.html?uri=cellar:fa6ea15b-b7b0-11e6-9e3c-01aa75ed71a1.0001.02/DOC_1&format=PDF.

national renewable energy targets or specific targets for the transport sector as there were for 2020.

Given an emissions reduction target, there is no strong economic argument for differentiated targets for renewable generation or energy efficiency (Böhringer et al., 2009), nor is there a strong argument for differentiated national targets (Aune et al., 2012). From an economic efficiency point of view, the change in European policy from differentiated national renewable targets therefore represents an improvement on the 2020 targets. The challenge for Irish policymakers is now to design the optimal set of policies to meet the objectives of the Clean Energy Package. There is an argument for resisting the temptation to include new renewable energy targets in domestic policy, and instead to show a firm commitment to a technology-neutral carbon reduction target. Determining the optimal pathway to a particular carbon reduction target will bring about gains for consumers both in terms of cost and transparency. The costs of failing to meet EU targets would ideally be included in any cost-benefit analysis.[17] However these costs are currently unknown, which presents a further challenge for energy policy.

Furthermore, as a result of EU policy, carbon emissions are treated differently depending on whether they originate in the ETS sector or the non-ETS sector.[18] This is suboptimal as the effect of carbon emissions on the environment is the same regardless of their origin. Another problem associated with ETS design is that it taxes the production, but not the consumption, of carbon emissions. There is thus an incentive to consume carbon-heavy goods produced in countries that do not tax carbon to the same degree as the EU, known as carbon leakage (Kuik and Hofkes, 2010). On a related note, for example, Curtis et al. (2013) found that a carbon price floor in the UK decreased carbon emissions from the UK but increased carbon emissions elsewhere.

While many of these design flaws with the EU ETS have been acknowledged, unless there is a strong shift in policy at EU level, Irish policymakers will have to design energy policy within the limitations of the EU policy regime. In particular, there may be an economic argument for requiring separate regulation and/or subsidisation policies for the ETS sector. Di Cosmo and Malaguzzi Valeri (2017) show how renewable electricity from 2008-2012 simultaneously delivered a lower electricity price and lower emissions, in spite of the weak ETS price. Lynch and Curtis (2016) show that wind generation has a value in its ability to reduce

17 Ireland is currently one of the few EU countries projected to miss the 2020 target for total renewable energy, see http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017DC0057&qid=1488449105433&from=EN.

18 See ec.europa.eu/clima/policies/ets_en.

the probability of very high price spikes and increasing certainty around energy prices, apart from any price-reduction contribution. In the absence of a strong ETS price signal, separate subsidisation programmes for renewable generation may therefore be a second-best policy. However any such subsidy scheme should still follow the principles of least cost and technology neutrality, for example by determining subsidisation levels for renewable electricity through a technology-neutral auction process. The optimal level of renewable energy in Ireland, in all three energy sectors, is still unknown and research in this area should be prioritised in order to inform policy.

At present the 2020 target for renewable electricity, at 40 per cent, is much higher than the targets for the heating and transport sectors, at 12 per cent and 10 per cent respectively.[19] There are several arguments for shifting the Irish focus from the electricity sector towards the heating and transport sectors. The first argument is the relative size of the sectors – the electricity sector accounts for just under 20 per cent of total final energy demand,[20] and so the current target of meeting 40 per cent of electricity demand with renewable generation equates to meeting just under 8 per cent of total energy demand with renewables. Secondly, the benefits of each additional unit of renewable energy in each sector, both in terms of costs and emissions, are likely to reduce as the total amount of renewable energy increases.[21] The costs associated with the integration of ever higher amounts of renewable electricity will also increase. There are concerns about social acceptability of renewable electricity generation also (see Bertsch et al., 2016 and Hyland and Bertsch, 2017). The public desire for higher levels of renewable electricity should be compared with the acceptance of renewable technologies in the heating and transport sectors, as well as the acceptance of other carbon-reducing technologies, and should form part of the analysis informing energy policy post-2020. Thirdly, reducing carbon emissions in the ETS sector in Ireland will not reduce total European emissions, but instead shifts those emissions to another European Member State.[22] Emission reductions in the non-ETS sector, however, result in a global decrease in emissions. Finally, there is considerable uncertainty surrounding future ETS prices, which means low carbon investments in the ETS sector face a risk premium. Strong government commitment to the principle, if not the level, of carbon taxation in the non-ETS sector means there is more certainty around the future cost of carbon and so there is less risk associated with investing in low carbon technologies.[23] This

[19] These targets were set as part of the National Renewable Energy Action Plan, see www.dccae.gov.ie/en-ie/energy/topics/Renewable-Energy/irelands-national-renewable-energy-action-plan-(nreap)/Pages/Action-Plan.aspx.

[20] www.seai.ie/Publications/Statistics_Publications/Energy_in_Ireland/Energy-in-Ireland-1990-2015.pdf.

[21] This is a standard Diminishing Marginal Returns argument.

[22] This is known as the waterbed argument, see for example papers.ssrn.com/sol3/papers.cfm?abstract_id=2654641.

[23] See for example Walsh et al. (2014) for a demonstration of how a carbon taxation regime would incentivise investment in CCS technology while a carbon price scheme would not.

means that carbon-reduction technologies in the heating and transport sectors would have less uncertainty surrounding their future profitability compared to technologies in the electricity sector. In the heating sector, for example, certainty surrounding a higher carbon price going forward would lead to an increased incentive to switch from coal and peat to gas, or would provide an incentive to invest in insulation in order to reduce energy bills.

In summary, future energy policies, beyond the 2020 targets, should take into consideration the true impact on global carbon emissions, rather than focusing solely on meeting EU mandated targets for emissions reduction and/or renewable energy production. These policies should be informed by robust analysis, which includes not only the cost of the policies but also the risks associated with them.

## 3.2 Security of supply

Similar to the case of environmental policy, some of the main policy questions in the area of supply security are actually unlikely to be impacted either way by Brexit. The first is the optimal level of interconnection (independent of which markets Ireland interconnects with), either for gas or electricity. New gas interconnection to Great Britain would have a positive impact on the security of supply for both gas and electricity, as the probability of an electricity shortage arising from a gas shortage would be reduced. New electricity interconnection would have a positive impact on the security of supply for electricity but any impact on gas security would be very small. However electricity interconnection can have a greater diversification effect, as the electricity supply is supplemented by the entire electricity generation fleet of the neighbouring system, which includes generation from multiple fuel types, while a gas interconnector connects to one fuel only (albeit a fuel that may have multiple supply sources, e.g. indigenous supply, pipeline supply, LNG, etc.). Furthermore, new electricity interconnection to France is possible, bringing with it the benefits of diversification by interconnecting to a new market. New gas interconnection would most likely only supplement the existing interconnection with Great Britain. Finally the tariffs for flows over interconnectors would have to be well-designed by the Commission for Energy Regulation (CER) as the flows over gas interconnectors have implications for flows over electricity interconnectors and vice versa. There are also considerations regarding competition and market power. A robust examination of the strategic choice between gas and electricity interconnection should be conducted in order to inform sound policy. This examination should take account of the interaction of the tariffs on gas and electricity interconnectors, as well as any alternative measures that can be taken to enhance energy security, such as those outlined in the discussion on gas security above.

Within the Irish electricity market, new interconnection is required between North and South in order to ensure security of electricity supply in Northern Ireland from 2021. The System Operator of Northern Ireland (SONI) has gone so far as to state that they cannot be confident they can 'keep the lights on' past 2021 without the North-South interconnector (House of Commons Northern Ireland Affairs Committee, 2017). The interconnector is estimated to reduce costs in the SEM by €30 million per year and wholesale electricity prices by 0.9 per cent (Curtis et al., 2013). These financial benefits would accrue to consumers on the whole island.

Finally the policy of running the three peat stations at maximum capacity, regardless of whether it is economic to do so, is justified by means of a security of supply argument (Tuohy et al., 2009). Consumers cover the extra costs of this policy through a Public Service Obligation levy included on their bills[24] and this levy is recalculated every year (see for example CER, 2016). This policy, which is due to expire in 2020, has led to overly expensive carbon-heavy electricity generation. The PSO levy is applied to all consumers' bills regardless of electricity consumption or of ability to pay and so is a regressive policy (Farrell and Lyons, 2015). In an effort to reduce carbon emissions from the peat stations, a policy decision to co-fire the stations with 30 per cent biomass was made. However this policy is also far more expensive than alternative generation options (O'Mahoney et al., 2013).

The policy of prioritising high-cost electricity generation from peat has been questioned from as far back as 1992 (Nic Giolla Choille, 1992). Regional benefits including employment in the Midlands have featured as arguments for maintaining the policy, although the actual justification is based on a security of supply argument. The existence of the peat stations is sufficient to contribute to security of supply and there is no added security benefit from running the stations at maximum capacity. Reversing this policy, which would bring about benefits for Irish consumers (Tuohy et al., 2009) regardless of Brexit, would aid the cost and environmental arms of energy policy with no consequence for security. While the policy has all but run its course, it serves as a reminder of the potential for various arms of energy policy (affordability, sustainability and security of supply) to conflict, as well as the danger of including supplementary objectives (such as regional employment) in energy policy.

[24] The PSO levy also covers the costs of various electricity support schemes such as renewable energy and, until recently, gas plants deemed necessary for security of supply.

## 3.3 Competition in electricity markets

The level of competition, both in wholesale and retail markets, is a very important driver of electricity prices. The level of wholesale competition is influenced to some degree by the amount of interconnection with other countries. Given the move to the new electricity market design, competition is even more important to ensure competitive wholesale prices (Di Cosmo and Lynch, 2016). Fully integrating our energy market with EU markets may be a draw for more players and therefore more competition in energy retail markets. However energy markets are highly unlikely to reach perfectly competitive levels on their own (Oderinwale and van der Weijde, 2016) and so there will always need to be robust regulation in place to protect the consumer. To date, analysis of competition in the retail sector has included the level of switching between energy supply companies (see for example CER, 2017). While consumers switching supplier can aid competition, it is not a definitive measure of competition, not least because it does not account for the possibility that the same consumers regularly switch suppliers, while being cross-subsidised by consumers who remain with one supplier. More robust analysis of the level of competition in Irish energy markets should be prioritised in order to protect consumers.

# 4. CONCLUSION

The consequences of Brexit for the energy sector, particularly in the area of security of supply, should certainly inform Irish energy policy in the short and medium term. However, this should not be to the neglect of other salient issues. In summary, when it comes to energy and climate policy, policymakers should focus on the key issues (competitiveness, carbon pricing and taxation and infrastructure) rather than concentrating to an excessive degree on issues arising from Brexit, which may prove peripheral in determining the degree to which the energy sector impacts on the welfare of the Irish people.

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