

The Energy Institute response to the House of Lords EU Energy and Environment Sub-Committee inquiry – Brexit: energy security.

1. About the Energy Institute

- 1.1. The Energy Institute (EI) is the professional body for the energy industry, developing and sharing knowledge, skills and good practice towards a safe, secure and sustainable energy system.
- 1.2. The EI supports over 23,000 individuals working in or studying energy and 250 companies worldwide, providing learning and networking opportunities to support professional development, as well as professional recognition and technical and scientific knowledge resources on energy in all its forms and applications.
- 1.3. A registered charity, incorporated by Royal Charter in 2003, the EI serves society with independence, professionalism and a wealth of expertise in energy matters. The EI is licensed by the Engineering Council (UK) to offer Chartered, Incorporated and Engineering Technician status to engineers, the Science Council to award Chartered Scientist status, and licensed by the Society for the Environment to award Chartered Environmentalist status.

2. Energy Institute response

- 2.1. The EI welcomes the opportunity to make the following submission to the EU Energy and Environment Sub-Committee to support the inquiry into the implications of Brexit for energy security in the UK. This is particularly the case as energy policy issues have so far had relatively little share of air-time in Brexit-related discussions, yet are of immense importance to the future economic prospects of the UK. This response is based on views of EI members, collected via several member engagement activities about the potential consequences of Brexit for the energy industry, including:
 - 2.1.1. The [Energy Barometer 2017](#)¹, an annual survey of the EI College, a group of EI professionals and pre-professional members. A total of 466 members (a sample size representative of EI professional and pre-professional members) completed the survey online in February 2017.
 - 2.1.2. Energy Barometer follow-up surveys, conducted among EI members and professional members of the Nuclear Institute, regarding the possibility of the UK leaving Euratom. A total of 232 respondents completed the surveys online in June and July 2017.
 - 2.1.3. A call for contribution to the EI response to the Energy and Climate Change Committee inquiry “Leaving the EU: implications for UK energy policy” submitted in September 2016². A total number of 30 detailed written statements contributed to the EI response.

¹ The Energy Barometer 2017, https://knowledge.energyinst.org/_data/assets/pdf_file/0017/304451/Energy-Barometer-2017.pdf

² EI “Leaving the EU: Implications for UK energy policy” consultation response, <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/energy-and-climate-change-committee/leaving-the-eu-implications-for-uk-energy-policy/written/38177.pdf>, October 2016

2.1.4. Ongoing consultation and engagement with industry specialists and subject matter experts.

3. Executive Summary

- 3.1. The UK may be an island but it would be a mistake, post -Brexit, to treat our energy system as such. Our UK gas and power systems have become increasingly integrated and connected to Europe over the last 30 years - to our immense benefit in terms of security of supply, flexibility, resilience and overall cost-effectiveness. We need to retain and indeed increase this interconnectedness.
- 3.2. The UK's withdrawal from the EU has the potential to affect the security of supply due to investment uncertainty and the resulting risk to critical energy projects; the potential for tariffs to undermine energy investment; and the potential for the maintenance and development of interconnectors to be jeopardised by leaving the Internal Energy Market.
- 3.3. Brexit also poses the risk of hindering the development of low carbon technologies in the UK, as well as the potential for costs to consumers to rise.
- 3.4. EI members call for the UK to retain access to the EU energy market and continue to participate in the Internal Energy Market (IEM) in some form.
- 3.5. To facilitate future trade, members wish for the minimal duties to be applied to imports of energy and energy technology.
- 3.6. EI members are concerned about potential disruption to interconnector economics, such as loss of gas and electricity trading flexibility, delays in new interconnector investments, disruption over existing joint supply agreements, and delays resulting from the need to negotiate new trade agreements and interconnectors' operation regulations.
- 3.7. Government must continue to ensure the UK is regarded as one of the leading research and development nations in Europe by continuing EU funding levels. It should foster innovation by prioritising tax breaks and other appropriate support mechanisms for R&D and academia-industry collaboration, and for early-stage entrepreneurs with innovative technologies targeting the global transition to a lower carbon world.
- 3.8. Leaving Euratom is expected to negatively impact access to non-UK nuclear expertise, the cost and delivery of new nuclear initiatives such as Hinkley Point C, the availability of labour and the UK supply chain.

4. *What are the implications of the UK's withdrawal from the EU for the UK's energy security?*

- 4.1. The need for secure supplies of electricity, gas and primary energy continues to be one of the most pressing concerns for energy professionals, as expressed in three consecutive annual Energy Barometer surveys in 2015-2017.

- 4.2. According to EI members, challenges to future security of supply include impending loss of generating capacity, increases in demand, a continued dependence on imports and geopolitical uncertainties.
- 4.3. Although such concerns have been present already prior to the Brexit process, the impending withdrawal from the EU has the potential to exacerbate these further.
- 4.4. EI members believe that energy security could be adversely affected by the UK's withdrawal from the EU due to several potential threats, including:
 - 4.4.1. **Investment uncertainty** - any Brexit-related uncertainty in the investment climate may lead to disruptions in building energy storage and infrastructure capacity, crucial in managing peaks in demand and in reducing the UK's dependence on fossil fuels.
 - 4.4.2. **Tariffs** - Members also expressed concerns about tariffs being levied on critical goods and services for the energy sector, including those needed in the nuclear supply chain or power generation equipment. Such new tariffs are likely to create barriers for energy-related foreign direct investment and could lead to increased cost and delays in the construction of energy infrastructure, such as new power generation plants. In addition to duties on goods and services, any restriction on free movement of labour is likely to adversely impact the sector's needs in design, engineering and construction.
 - 4.4.3. **Future relationship with the EU energy market** – As a result of the Britain's move away from integration in the European energy market, EI members state that the operation, maintenance and development of interconnectors could be jeopardised by new regulation and the potential breakdown of relationships with the continental counterparts. A breakdown in cooperation may also undermine coordinated efforts to strengthen cyber-security, increase risk of power shortages as well as raise system cost, due to the need of further investments in energy storage or back-up capacity³. The impact of Brexit on energy interconnection is further discussed below.
- 4.5. In addition to the risks posed to energy security, EI members feel Brexit has the potential to result in a number of additional serious risks, if not managed appropriately:
 - 4.5.1. **Development of low carbon technologies** - Unstable government policy contributes to heightened risk and deteriorates the investment climate, disproportionately affecting immature low carbon technologies. As Brexit has eclipsed all other debates for more than a year now, the debate on climate and energy policy has largely come to a halt, adversely affecting investor confidence. Investments in carbon capture and storage (CCS), hydrogen, marine and nuclear energy are likely going to be the worst affected, among others by delays in bringing forward the Clean Growth Plan and related policies on Carbon Capture and Storage (CCS), small modular reactors and tidal lagoons.

³ Pollitt, M. (2017) "The economic consequences of Brexit: energy." Energy Policy Research Group Working Papers, No. EPRG1702. Cambridge: University of Cambridge.

4.5.2. Members have voiced concerns that the impetus for developing renewable technologies may falter as a result of Brexit⁴. This concern is prompted by a perceived lack of coordinated plans for balancing domestic economic growth, security of supply and low-carbon requirements in post-Brexit UK. Instead, EI members emphasise the benefits of continued participation in European regulation and standardisation bodies.

4.5.3. **Additional costs for end users** - if exchange rates fluctuate and tariffs on gas and electricity are introduced, this would likely negatively affect the price of energy imports, ultimately leading to a rise in costs for end users. Additionally, exchange rate volatility also has the potential to negatively affect the transition towards a low-carbon economy.

4.6. Finally, we must stress the widespread concerns felt by EI members about having access to appropriate professional skills post-Brexit, to support the entire energy industry. According to the annual EngineeringUK 2017: State of Engineering report⁵, the UK already faces a shortage of graduate-level entrants to the wider engineering sector, with a shortfall of some 20,000 per annum, and 40,000 of the remaining supply coming from non-UK domicile graduates. It is vital that clear and early signals are given that the UK will be open and welcoming for the EU and other overseas talent needed by our universities and industries. This should be done alongside improving the pipeline of UK-domicile engineering and technology skills at graduate and apprentice levels.

5. *Could, or should, the UK stay in the Internal Energy Market (IEM) post-Brexit? If not, what should be the priorities for continued co-operation with the EU?*

5.1. It is imperative that movement of gas and electricity between the UK and mainland Europe continues to flow - any other outcome would severely risk security of supply and likely increase the costs of energy supply.

5.2. EI members call for the UK to retain access to the EU energy market and continue to participate in the Internal Energy Market (IEM) in some form. However, if the UK is bound by IEM rules, the UK should have opportunity to influence them. Any negotiation of Britain's access to the market should aim to secure free trade of, and strategic access to, fuels and electricity moving via connectors.

5.3. Members are also clear in their desire for the minimisation of duties applied to imports of energy and energy technology (e.g. oil and gas technology and services, power generation equipment), aligning exportable energy-consuming products and other technology with EU regulations to facilitate trade⁶.

⁴ Dr Douglas Halliday, EI "Leaving the EU: Implications for UK energy policy" consultation response, <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/energy-and-climate-change-committee/leaving-the-eu-implications-for-uk-energy-policy/written/38177.pdf>, October 2016

⁵ EngineeringUK, "Engineering UK 2017: State of Engineering" report, <https://www.engineeringuk.com/research/>, February 2017

⁶ Energy Institute, "Leaving the EU: Implications for UK energy policy" consultation response, <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/energy-and-climate-change-committee/leaving-the-eu-implications-for-uk-energy-policy/written/38177.pdf>, October 2016

- 5.4. As the IEM is as much about facilitating trade between its members as about harmonising domestic energy policies (Chatham House, 2017), EI members expect the UK to harmonise its domestic post-Brexit energy policy with the EU. The majority of EI members want the Government to transfer key energy-related EU directives into UK law, including directives on renewables, energy performance on buildings, vehicle emissions and civil nuclear.
- 5.5. EI members' persistence over participation in the IEM may stem from the fact, that historically the UK has been at "the forefront of efforts to create a European-wide single market for electricity and gas"⁷. Progress in this area has been largely inspired and led by the UK example of liberalising the energy market. Hence, EI members signal their apprehension about losing the UK's historical influence over rule-making and developing a pan-European market.
- 5.6. Our current interconnector portfolio connecting the UK to Denmark and Norway is already creating the foundations of a 'North Sea Grid'. The UK itself has signed, alongside with EU and non-EU states, a political Declaration on the North Sea (June 2016) to strengthen cooperation in the region. The UK's participation to this declaration is not dependent on Brexit and we therefore see no reason why Brexit would affect cooperation in this area, but it is important for HMG to underscore this.

6. What will be the effect of Brexit on UK-EU energy interconnection?

- 6.1. While the UK may be leaving the EU in political terms, the pipes and wires that connect us remain and we will continue to be joined in physical terms. Coordinated trading arrangements, underpinned through EU legislation within the IEM, help to ensure lower prices for consumers and aid security of supply for both the UK and EU member states. This is done by improving the efficiency and reliability of interconnector flows.
- 6.2. In EI members' opinion, the current interconnected nature of the UK's energy system and seamless trade in electricity and gas across borders is crucial for security of supply and operations of energy markets on both sides of the networks.
- 6.3. The electricity system operator (SO) has contracts to provide cross-border ancillary balancing services with other European Transmission System Operators (TSOs) to support the UK's security of supply. Any loss of access to these services is likely to increase the cost of maintaining the UK's security of supply and may make the management of the electricity network at times of system stress more difficult.
- 6.4. The UK currently shares 4GW of electricity interconnection with the EU (including 1GW of electricity interconnection with Ireland), with a further 4.8GW already in development by National Grid (NEMO, North Sea Link, IFA2 and Viking). Looking forward, the only feasible option for interconnection to non-IEM members is with Iceland.
- 6.5. Although the UK is not today heavily dependent on gas imports from the EU for security of supply (Norway being the key pipeline supplier), these imports do support both the efficient operation of the GB gas system and the UK achieving affordable gas security of supply for consumers,

⁷ Pollitt, M. (2017) "The economic consequences of Brexit: energy." Energy Policy Research Group Working Papers, No. EPRG1702. Cambridge: University of Cambridge.

especially at times of peak demand. The UK's extensive LNG import infrastructure, through several terminals, has ensured that UK exports via the interconnectors remain robust, despite the decrease in UK production.

- 6.6. Cooperation is important to ensure the efficient import and export of energy across electricity and gas interconnectors. Under a 'Hard Brexit', we expect these flows to continue in the long-run, but do not exclude the potential for some short-term flow impact. While the business case for interconnectors remains strong, there will be legal, systems and regulatory challenges on Day One to ensure. These include, among other things, gas and electricity trading flexibility, undisturbed investment in new interconnectors, clarity over joint supply agreements and interconnectors' operation regulations in the short term
- 6.7. We do not yet know what market arrangements will be in place for interconnectors post Brexit. If the UK is not a member of the Internal Energy Market (IEM), EI members believe that the business case for building electrical interconnection is still positive regardless of Brexit. A move to a non-IEM scenario would require extensive work to develop rules, systems and processes that all stakeholders can use effectively.
- 6.8. Acknowledging the UK's indigenous energy resources, EI members believe that efficiencies available through trading energy with continental neighbours offer significant benefits to consumers, the resilience of the British economy and the environment⁸. With the rapid expansion of renewables technologies on the energy supply side, there is an increasing need for integration of separate national systems with large scale interconnectors for gas and power. This will enable the UK to achieve more secure and lower cost energy supplies than would otherwise be possible, given the different timings of peak demand and peak supply between systems and countries, and the different storage opportunities.
- 6.9. Thus, EI member are concerned that any disruption to interconnection not only affects collaboration with our European neighbours in the energy sphere, but also has the potential to undermine an effective mechanism of making the UK energy system more flexible and smarter.

7. *What is EU funding used for in relation to energy infrastructure and research? Can it be effectively replaced by existing UK schemes?*

- 7.1. EI members believe that UK energy security is best assured through ongoing collaborative action with EU members, including participation in joint EU research and demonstration projects, collaboration on tackling climate change and development of renewable technology, interconnection infrastructure and grid standards.
- 7.2. It was stressed by EI members, that the UK has enjoyed considerable success with EU research funding and funding for the training of researchers. The ability of the UK to participate as a full partner in European research programmes post-Brexit, was identified as a matter of key importance.

⁸ Steve Holliday (EI Vice-President), <https://www.thetimes.co.uk/article/energy-must-be-a-top-priority-at-negotiating-table-k666pf2kf>, June 2017.

7.3. As put by one EI member: *“EU funds are vital in ensuring that UK universities remain at the forefront of energy technology research. The UK is regarded as one of the leading research and development nations in Europe. Without continuing access to EU funding through the Horizon 2020 programme this is unlikely to continue.”*⁹

7.4. Around £2.5 billion of the UK’s energy-related infrastructure, climate change mitigation, and R&D annual funding originates from EU funds and the European Investment Bank loans (Chatham House, 2017), which will need to be covered from other sources. EI members believe the Government should foster innovation by prioritising tax breaks for R&D and academia-industry collaboration, over more direct financing from public resources, as the top government measures to boost innovation in the energy area.

8. What are the implications of the UK’s withdrawal from Euratom? Will it affect the UK’s security of supply?

8.1. When surveyed, a clear majority of members from the EI and the Nuclear Institute believe that leaving Euratom would negatively impact access to non-UK nuclear expertise, the cost and delivery of new nuclear initiatives such as Hinkley Point C, the availability of labour and the UK supply chain.

8.2. Additionally, it is expected that leaving Euratom would be negative for security and safety standards, the UK’s nuclear credibility, its standing in fusion and research in the sector. Thus, given the importance of energy supply, nuclear safety and the UK supply chain, EI members urge the Government to consider carefully whether leaving Euratom really is an essential part of leaving the European Union.

Ends.

⁹ Dr Douglas Halliday, EI “Leaving the EU: Implications for UK energy policy” consultation response, <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/energy-and-climate-change-committee/leaving-the-eu-implications-for-uk-energy-policy/written/38177.pdf>, October 2016