

# Energy UK's response to HM Government Green Paper: Building our Industrial Strategy

13<sup>th</sup> April 2017

## 1. About Energy UK

- 1.1 Energy UK is the trade association for the GB energy industry with a membership of over 90 suppliers, generators, and stakeholders with a business interest in the production and supply of electricity and gas for domestic and business consumers. Our membership encompasses the truly diverse nature of the UK's energy industry from established FTSE 100 companies' right through to new, growing suppliers and generators, which now make up over half of our membership.
- 1.2 Our members turn renewable energy sources as well as nuclear, gas and coal into electricity for over 26 million homes and every business in Britain. Over 619,000 people in every corner of the country rely on the sector for their jobs with many of our members providing lifelong employment as well as quality apprenticeships and training for those starting their careers. The energy industry adds £83bn to the British economy, equivalent to 5% of GDP, and pays over £6bn in tax annually to HMT.

## 2. Executive Summary

- 2.1 Energy UK welcomes the opportunity to respond to HM Government's Green Paper on Building our Industrial Strategy. Energy UK considers that the goals of decarbonisation and security of supply can be achieved at the lowest cost to consumers, whilst considering the wider objectives of an industrial strategy by delivering: increased productivity and living standards; regional growth; export led trade and supply chains; development of a successful skills base; and a world class leading science, research and innovation economy and the industrial opportunities that can be derived from successful energy innovation.
- 2.2 The energy industry is an important contributor to the UK economy through employment, innovation, supply chains, skills and UK competitiveness, and the industry's commitment to investment in low carbon infrastructure and networks has resulted in it being one of the most productive in the UK; it is estimated that the gross value added per head in the sector reached £183,000 in 2014<sup>1</sup>. The energy industry's continued investment in infrastructure is helping to drive technological development, competition, and productivity, and will continue to play a fundamental role within the economy following the UK's exit from the European Union. Alongside policy stability and clarity, the Electricity Market Reform (EMR) policy among others mentioned within this response will support the energy industry in delivering an energy system that is fit for purpose, and one that delivers low carbon technologies at the lowest costs to UK consumers.
- 2.3 Energy UK would like to highlight that it is becoming increasingly important not to consider each sector in isolation – such as power, heat and transport – but to treat these sectors in a whole systems approach framework if the UK is to successfully deliver its decarbonisation targets at the lowest cost, whilst further benefiting from wider economic activity. We must ensure these interdependencies are understood and managed, as well as allowing innovative solutions that impact these sectors to develop and succeed. Energy UK considers that greater co-ordination between Government departments is needed to ensure the required linkage between transport, heat and power is well understood.

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<sup>1</sup> Energy UK, Powering the UK 2015

## 2.4 Our key messages can be found below:

- The EMR policy provides the framework for the electricity sector to deliver a secure supply of electricity as well as low carbon energy to households and businesses throughout the UK, and is helping to drive productivity, technology cost reduction and employment through low carbon investment. The framework should continue to evolve in order to provide a stable and flexible environment in which all technologies can compete on a level playing field; this allows delivery of the most cost-effective forms of technologies, encourages innovation, offers certainty for supply chains to develop, and provides a decarbonised sector at the lowest cost to consumers.
- Government should set out an annual policy statement which provides a clear forward look of forthcoming policy, including Contracts for Difference (CFD) allocation rounds, in order to provide clarity to investors on future policy commitments. Alongside this, the Government should look to produce an annually updated statement on the costs expected to be levied on customer bills. Energy UK believes there would be broad support for such statements to build investor confidence<sup>2</sup>.
- Energy efficiency should be seen as a key factor in lowering energy costs, improving standards of living and contributing to the UK's industry competitiveness and productivity. A demand led market for energy efficiency should be created and not relied upon through supplier obligations; this will deliver wider benefits of supply chain development and reduction in fuel poverty.
- Science, research and innovation is key to delivering increased productivity and growth. The Government should take a pro-active approach towards developing and supporting energy technologies in order to gain significant benefits from the industrial opportunities that come from being a leader in energy innovation. Government should engage with local institutions and academics to produce evidence based research in order to develop local solutions to low carbon investment in areas such as low emission vehicles and decarbonised heat, where a single solution will not deliver for all scenarios.
- The increasing demand for software and technology skills within the energy sector alongside existing engineering shortages is of critical concern to the industry. Energy UK supports the initiatives in the Science, Technology, Engineering and Mathematics (STEM) fields and believes the Government should continue to promote STEM subjects, as well as taking a forward looking approach in understanding the future skills requirements and how institutions today need to be developed in order to deliver this.

Energy UK welcomes the opportunity to further discuss the points raised within this response. Should you require further information or clarity on the issues outlined in this paper then please contact:

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<sup>2</sup> EEF, Submission to Autumn Statement 2016, <https://www.eef.org.uk/resources-and-knowledge/research-and-intelligence/industry-reports/autumn-statement-2016-submission>

# Response to Industrial Strategy questions

## 3. Investment in infrastructure

### *Refers to:*

**15. Are there further actions we could take to support private investment in infrastructure?**

**16. How can local infrastructure needs be incorporated within national UK infrastructure policy most effectively?**

3.1 The UK energy industry is estimated to have invested £42.1 billion in low carbon electricity generation capacity since 2010 as well as developing and upgrading networks to meet future energy demands<sup>3</sup>. Tighter margins in the power sector and a need to decarbonise the transport and heat sectors means that attracting investment in infrastructure is becoming extremely important in a globally competitive market. International players have already committed to huge infrastructure investments, with India planning to achieve 100GW of solar power and 60GW of wind generation by 2022, as well as Norway aiming to have 100% electric vehicles (EVs) on the road by 2025<sup>4</sup>. If the UK is to maintain its status as a leader in low carbon technologies and benefit from the industrial opportunities of moving towards a low carbon economy, it must look to encourage further investment in essential infrastructure within a whole systems approach framework – transport, heat and power. The UK will also need to continue to leverage its world class academic research bodies if it is to continue to lead in research and development.

**15. Are there further actions we could take to support private investment in infrastructure?**

### **a) Developing the right framework**

3.2 The energy industry broadly agrees that the EMR policy has provided the right framework to attract the required investment. Industry considers that the EMR framework should continue and evolve in line with clear and stable policies, as well as allowances for all forms of technologies to ensure delivery of the required £140bn investment needed by 2030<sup>5</sup>. The Levy Control Framework (LCF) previously provided a cap on the total expenditure on support for low carbon generation technologies, however, due to unforeseen circumstances the mechanism did not provide long term investment horizons or consider the overall impact on consumer bills. Instead, the £730 million budget for future CFD Allocation Rounds over this parliament is a more significant investment tool for low carbon technologies going forwards. The Government's latest position to review the LCF, with the aim of replacing it with an amended budgeting tool, is in line with Energy UK's position<sup>6</sup>; the future mechanism should provide clarity to investors regarding the funding available to future CFD allocation rounds beyond 2020/21 as well as accurately reporting the costs added to consumer bills.

3.3 Energy UK recommends that the Government sets out the timing of future CFD allocation rounds and the required level of low carbon generation for meeting the GB's carbon budgets, at least four years ahead of delivery, to provide a clear and long term signal to investors.

3.4 In order to ensure the UK's long-term energy security and to maintain investor confidence within the energy sector, a key priority for the Government must be to establish a stable environment for investment<sup>7</sup>. Energy UK believes, in order to facilitate this, Government should set out a clear

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<sup>3</sup> DECC, Low Carbon Energy Report,

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/419024/DECC\\_LowCarbonEnergyReport.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/419024/DECC_LowCarbonEnergyReport.pdf)

<sup>4</sup> CBI, Stepping up to the challenge, [http://www.cbi.org.uk/index.cfm/\\_api/render/file/?method=inline&fileID=E4F5C733-CE00-4F9B-BCF3B23D546CA71E](http://www.cbi.org.uk/index.cfm/_api/render/file/?method=inline&fileID=E4F5C733-CE00-4F9B-BCF3B23D546CA71E)

<sup>5</sup> Energy UK, Pathways to 2030, 2016.

<sup>6</sup> Energy UK, Future of the Levy Control Framework, <http://www.energy-uk.org.uk/publication.html?task=file.download&id=6071>

strategy through an annual updated policy statement, which provides a clear forward look of energy policy and a commitment to key policy mechanisms such as CFD.

**Recommendation: Government should set out at the earliest opportunity, implement rolling 1 yearly CFD allocation rounds, along with the level of support available in each allocation round (at least 4 years in advance) in order to provide visibility and certainty to investors.**

**Recommendation: Government should set out an annual policy statement which provides a clear forward look of forthcoming policy, including CFD allocation rounds, in order to provide clarity to investors on future policy commitments<sup>8</sup>. An annually updated statement should be published alongside this which outlines the costs expected to be levied on consumer bills.**

- 3.5 In order to meet the objectives of the Industrial Strategy, this investment framework should recognise the diverse attitudes that exist to a wide range of different and proven infrastructure technologies across the UK, whilst ensuring a level playing field for lowest cost technologies come to market<sup>9</sup>; this is important in delivering a decarbonised electricity sector in the most cost-effective way, and to minimise the cost to the consumer.
- 3.6 The Government cannot achieve decarbonisation of the power sector at the lowest cost to consumers without a robust, mature renewables industry and supply chain. Despite the UK being one of the most significant international actors in driving the cost-effectiveness of renewable energy, there are barriers to its deployment. In particular, the removal of a route to market for particular low carbon technologies represents one of the biggest barriers to investment for the industry. By re-opening all Pots in the CFD mechanism, the Government could adopt the technology neutral approach which the CFD was intended to deliver; bringing low-cost, low-carbon generation into the mix whilst also encouraging the further development of emerging technologies and markets.
- 3.7 Energy UK considers that all low carbon technologies have a key role to play post-2020 within the CFD mechanism and should be considered by the Government. To enable their further deployment, a collective agreement on the need for this lowest cost low carbon generation needs to be established as a first step. Once this is in place, a decision can be made on the appropriate mechanism to enable low carbon technology investment to proceed.
- 3.8 Stringent planning regulation will ensure that low carbon technology developments are built solely in communities that support them, which will robustly address the concerns of some stakeholders on this aspect. In bringing forward low carbon technologies, the Government could facilitate the deployment of the most cost-effective forms of renewable generation from a supply chain predominantly within the UK, providing value to the consumer and creating thousands of skilled jobs in our energy supply chain in the construction, services and manufacturing sectors.

**Recommendation: Government should ensure a route to market for all low carbon technologies post-2020, including those in Pot 1, by making the CFD auction regime technology neutral or introducing a market stabilisation CFD.**

- 3.9 The Carbon Price Floor (CPF) was implemented in order to acknowledge the full cost of carbon on society, and its objective is to support investment in low carbon generation and achieve the UK's carbon commitments; its implementation was seen as a transitional measure to supplement the EU Emissions Trading System (EU ETS) derived carbon price, which is not delivering a robust price signal (currently about Euro 5 per tonne of CO<sub>2</sub><sup>10</sup>) that is cost-effective for decarbonisation

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<sup>8</sup> EEF, Submission to Autumn Statement 2016, <https://www.eef.org.uk/resources-and-knowledge/research-and-intelligence/industry-reports/autumn-statement-2016-submission>

<sup>9</sup> Lawrence Slade letter to Nick Hurd, Industrial Strategy, February 2017.

<sup>10</sup> Price around Euro 5 on 13/04/2017

of the UK electricity system. Energy UK, following the announcements within the 2017 Spring Budget, calls for clear narrative from Government which sets out the future of the CPF. It is important that there is continuing visibility about the approach to the CPF, including the cap on Carbon Price Support (CPS), four years ahead consistent with the period of the T-4 Capacity Market auction. Members support strengthening the EU ETS to provide an effective carbon price signal across the EU. However, it is recognised that the effect of prospective changes to the EU ETS is unlikely to deliver a robust carbon price signal that is cost-effective for decarbonisation of the UK electricity system until well into the 2020s. Consequently, Energy UK members see the CPF as a transitional instrument which should be phased out at some point, but have not come to an agreed view on the appropriate conditions to trigger that, although for many there is a strong link with securing an appropriate carbon price from the EU ETS. All generating companies agree that certainty and predictability around the level of CPS rates remain critical factors going forward.

- 3.10 UK competitiveness should be considered when setting out the future of the CPF, with the immediate need for a strategy set out beyond 2020 in order to provide certainty and visibility to investors and industry

**Recommendation: Government should set out the future of the Carbon Price Floor to provide clarity and certainty to investors and industry.**

#### **b) Network investment and reform to ensure an energy system fit for purpose**

- 3.11 Network capacity investment and modernisation of the energy system will be required as we move towards increased electrification in sectors such as heat and transport. It is expected that investment in onshore, offshore and cross-border transmission network capacity will reach between £23bn and £50bn by 2030<sup>11</sup>. Innovation is essential to ensure that network operation investment is as efficient as possible.
- 3.12 As the UK makes progress towards decarbonising and modernising the energy system at least cost, it will be important to drive forward with innovation and efficiency improvements across the sector, including the networks. The UK transition to a low carbon economy is also bringing many new challenges to operating the electricity system, with greater flexibility becoming an increasingly valuable characteristic. We are moving away from the historical reliance on large thermal power generation and there is now a greater diversity of supply and Demand-Side Response (DSR) than ever before. A smarter energy system is about using energy in an efficient and affordable way, as well as getting the best end result for consumers through developments such as smart electricity grids, storage and smarter ways to connect the electricity, gas, heating and transport sectors.
- 3.13 Ofgem determines the level of expenditure and return network owners can make under a pre-negotiated price control settlement. The current RIIO (Revenue = Incentives + Innovation + Outputs) price control model, an international example of best practice, places a strong focus on performance and delivering value for GB bill payers, with returns largely dependent on performance against a set of key indicators. The mid period review of RIIO, and the next price control should consider the aforementioned changes which could have affected assumptions made in the past.
- 3.14 There is concern that the pace of change in the industry are highlighting flaws in the network charging arrangements which are causing distortions both to transmission and distribution connected generation. Addressing the issues holistically is necessary to ensure that the distortions do not manifest themselves in other areas of the electricity system, as failure to do so could result in ever higher costs faced by consumers. In respect to gas charging there is a risk that charging reforms could jeopardise the viability of existing gas generation and storage assets,

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<sup>11</sup> University of Cambridge and Imperial College London, Delivering future-proof energy infrastructure, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/507256/Future-proof\\_energy\\_infrastructure\\_imp\\_cam\\_feb\\_2016.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/507256/Future-proof_energy_infrastructure_imp_cam_feb_2016.pdf), February 2016

both of which are vital in ensuring gas generation can provide flexible backup for intermittent renewable generation sources.

- 3.15 There may be specific issues which can be addressed with more urgency than could otherwise be delivered within a wide ranging review; however, ensuring that all issues are taken forward holistically, with a view to interaction across the electricity and gas regimes is important where possible. This will help to deliver a charging methodology which is cost-reflective, transparent, stable and predictable, and fair. In any future network charging regime, due consideration must be given to the balance between creating appropriate price signals to trigger investment and behavioural change, and the need to protect consumers that may not be in a position to respond to such price signals. To meet the UK's ambition for a smart and flexible energy system<sup>12</sup>, charging reform needs to be co-ordinated from a whole system view to level the playing field for all energy resources and consumers on the transmission and distribution network. Dependent on the nature of the changes proposed, transitional arrangements may need to be considered, where projects have reached final investment decisions or that have already been built based on either long standing charging principles or policy decisions. We expect these considerations to be captured in Ofgem's Targeted Charging Review (TCR), Charging Coordination Group (CCG)<sup>13</sup>, Gas Transmission Charging Review (GTCR) and implementation of EU Tariff Code (TAR NC).

**Recommendation: Ofgem should take forward a holistic review of charging, ensuring that the multiple network charging issues are managed effectively.**

### **c) Infrastructure requirement in transport and heat networks**

*15. Are there further actions we could take to support private investment in infrastructure?  
16. How can local infrastructure needs be incorporated within national UK infrastructure policy most effectively?*

- 3.16 The UK's decarbonisation commitments set out under the Climate Change Act requires action to ensure delivery of lower carbon emissions within heat and transport. Although there is not a single solution to the transition to low carbon transport, heat and cooling, electrification is likely to play a key role by offering an option for decarbonisation.

#### **i. Electric Transport**

- 3.17 Improved vehicle efficiency has so far been offset by increased demand for travel, due in part to economic growth and falling fuel prices<sup>14</sup>. The introduction of EVs and ongoing support from Government through current incentives – including 35% off the cost of a car to a maximum of 2,500 or 4,500 depending on the model<sup>15</sup> - has encouraged the transport sector to progress towards its preferred decarbonised outcome. European countries such as Norway are leading the way in EV support and usage by offering financial incentives such as: 25% VAT exemptions; low annual road tax; zero charge on toll roads and municipal parking; and 50% reduced company car tax<sup>16</sup>. This has led to an overall Norwegian market share of 22% for EVs. If the UK is to optimise the benefits achieved from a pro-active approach to new technology within transport, incentives should evolve to address issues around finance, charging and stakeholder support. The end goal should be to strengthen the market and encourage broad uptake in order to create a market that can continue to progress without Government support. With this in mind, efforts

<sup>12</sup> Energy UK's position on a smart and more flexible energy system is presented within our response to the Ofgem and BEIS call for evidence: <http://www.energy-uk.org.uk/publication.html?task=file.download&id=6007>

<sup>13</sup> Energy UK, Electricity Charging Arrangements Report, <http://www.energy-uk.org.uk/publication.html?task=file.download&id=5903>

<sup>14</sup> Committee on Climate Change, Eight Annual Report, <https://www.theccc.org.uk/wp-content/uploads/2016/06/2016-CCC-Progress-Report.pdf>

<sup>15</sup> <https://www.gov.uk/plug-in-car-van-grants/what-youll-get>

<sup>16</sup> CBI, Stepping up to the challenge, [http://www.cbi.org.uk/index.cfm/\\_api/render/file/?method=inline&fileID=E4F5C733-CE00-4F9B-BCF3B23D546CA71E](http://www.cbi.org.uk/index.cfm/_api/render/file/?method=inline&fileID=E4F5C733-CE00-4F9B-BCF3B23D546CA71E)

should be made to encourage a change in consumer behaviour and drive additional investment in the market to ensure there is the correct level of infrastructure support for the roll out in terms of charging points, networks, market settlements and retail tariffs.

- 3.18 The development of an EV market with a thriving and competitive manufacturing base will help the Government achieve many of the Industrial Strategy objectives, including: regional growth and employment, mature and growing supply chains, and future exports.
- 3.19 Consideration must be made now for charging and re-fuelling requirements for the number and range of vehicles we can expect by 2030, including domestic charging for those with and without off-street parking. Facilitating greater demand flexibility will play an important role as the share of EVs in the UK increases. The introduction of EVs is likely to need DSR to be optimally rolled out with a more systematic and integrated approach required. The impact which large scale EV uptake would have on the power sector would result in the need for greater network and generation capacity to meet a larger peak demand: the least cost solution for consumers, therefore, is to have a successfully designed DSR system that works alongside EVs. If used optimally the DSR potential of EVs not only provides a potential contribution towards supply security and the provision of balancing services such as frequency response, it can also contribute towards smoothing out peak demand, which can provide further benefits to consumers through lower energy bills. There is a need to ensure that smart charging platforms are developed with sufficient flexibility to enable access for multiple parties. There will also need to be an effective customer protection framework put in place.

**Recommendation: A cross sector approach to EVs needs to be considered so that the correct framework is implemented to support the roll-out, in terms of charging points, network support, market settlements and retail tariffs. This must be integrated into a DSR type framework in order to ensure limited impact on the power sector and consumer bills.**

- 3.20 Energy UK would also like to highlight the importance that hydrogen could play in the powering of cars, buses and heavy goods vehicles, by providing a solution to decarbonising transport and improving air quality, especially in large urban areas.

## ii. Decarbonising heat

- 3.21 An area of concern for Energy UK within this Green Paper is the lack of focus on domestic heat. The Industrial Strategy should recognise the need for trials and knowledge gathering. Trials should be technology neutral and encourage the development of a level playing field, including in regulation and taxation of different technologies. Government must work to ensure that those consumers off the gas grid are not forgotten in the move towards decarbonised heat. Hydrogen and green gases show promise for future decarbonisation of heat, but neither are currently a cost-effective solution for decarbonising the mains gas grid; therefore, further research and analysis is required to determine their feasibility. It is therefore important that Government avoids picking winners given the likely need to consider a range of decarbonised heating technologies. The Government's plan for delivering the Fifth Carbon Budget should form a fundamental pillar of the Government's Industrial Strategy.
- 3.22 Decarbonising heat provides a big challenge for Government and industry. Currently, 20% of UK greenhouse gas emissions come from heating and hot water, with two-thirds of this being attributed to the domestic sector<sup>17</sup>. If the UK is to meet its decarbonisation commitments there needs to be a pro-active strategy with a clear direction from Government policy. Targeted funding is required for break-through technologies at national and local levels, appreciating that there is no single solution in terms of technologies. There is a need for more coordination between gas and electricity network operators, energy suppliers, technology providers, Government and local

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<sup>17</sup> CBI, Stepping up to the challenge, [http://www.cbi.org.uk/index.cfm/\\_api/render/file/?method=inline&fileID=E4F5C733-CE00-4F9B-BCF3B23D546CA71E](http://www.cbi.org.uk/index.cfm/_api/render/file/?method=inline&fileID=E4F5C733-CE00-4F9B-BCF3B23D546CA71E)

authorities on where there are existing constraints on the network, and where a solution needs to be tailored to address this issue, especially as decarbonising heat is likely to have a significant impact on the power and gas sectors.

- 3.23 In the long term, a macro strategy at a national level is possible but in order to address the different requirements and barriers to decarbonised heat across the UK, projects should be regionally driven to allow for relevant solutions to be deployed in the right areas. This allows for differences in population density, housing stock, available resources, and socioeconomic balance to be taken into consideration when selecting a framework and technological approach to decarbonising heat. Consideration should be given as to how such regional approaches are integrated into the national strategy such that customers are not disadvantaged (noting the devolved nature of heat policy in Scotland).
- 3.24 Further research and trials are required for all potential technologies in order to provide research-based evidence towards the optimal solution: this will require local authority involvement and greater collaboration between Government and academics. Energy UK supports in principle the positions set out by the Committee on Climate Change (CCC) on the next steps for UK heat policy<sup>18</sup>, and further emphasises the need for further trials to increase available information.
- 3.25 Energy UK members believe that there is scope to review the Renewable Heat Incentive (RHI) to enable more effective targeting towards domestic customers. There is currently poor take up of the RHI and in our view this is a missed opportunity. There is also no spending horizon beyond 2020/2021 for RHI and this may be reducing interest in longer term financing arrangements from the investment community. Work is needed in this area to enable better targeting and a longer term framework.
- 3.26 A national mission statement out to 2050 should be set following trials across the UK in order to enable the market to develop the optimal solution and deliver it in the most cost effective way. This strategy will further boost the market by encouraging support from investors, who will be given clear sight on what to expect from UK heat.

**Recommendation: Government should develop further research and trials to develop possible solutions towards decarbonising heat at a regional level.**

**Recommendation: The Government's plan for delivering the Fifth Carbon Budget should form a fundamental pillar of the Government's Industrial Strategy.**

- 3.27 For electrification of heat and transport to provide a cost-effective solution towards decarbonising these respective sectors, a clear assessment of the potential risks to the power system should be considered in order to ensure the impact on the power sector is understood and controlled.

#### **d) Regional infrastructure change**

### **16. How can local infrastructure needs be incorporated within national UK infrastructure policy most effectively?**

- 3.28 Energy UK supports the focus the Government has placed on regional development within the Green Paper and believes that the heterogeneous investment requirements across the UK requires greater support for local energy investment initiatives, especially in areas such as decarbonising the heat network. This will allow for a more flexible and cost effective energy system in the future which can deliver low carbon solutions at the lowest cost to consumers.

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<sup>18</sup> CCC, Next Steps for UK Heat Policy

- 3.29 For example, the H21 Leeds City Gate project<sup>19</sup> research explores whether urban areas have the potential to switch from natural gas to hydrogen on existing gas networks in a cost-effective way. The project also looks at the requirements for success in terms of deploying hydrogen alongside the use of carbon capture and storage (CCS). Implementation of this model is expected to enable future efficiency gains through information gathering for upcoming projects. If taken forward it will also increase employment, and create a low carbon source of heating which may require less change in behaviour from a consumer perspective, as it holds similar characteristics to that of natural gas<sup>20</sup>. This may not necessarily be suitable for all areas and Government must work with local authorities to determine the most beneficial solutions within all areas of the energy sector. Energy UK supports the approach BEIS are taking in gathering more information on the process for repurposing gas networks.
- 3.30 Over the past century, the UK's energy infrastructure has grown and evolved, creating hundreds of thousands of jobs in communities across the country. As a result, certain areas of the UK have a strong heritage or 'specialisation' in energy technologies; for example, the north of England has a well-defined transmission system based on the proliferation of predominantly fossil-fuel based power stations in the region. In recent years, coastal areas such as the Humber Estuary have focused on supporting emerging technologies such as offshore wind and handling new fuel sources such as biomass instead of coal – incentivising the development of new knowledge hubs such as the Humber Energy Campus in the process. The Industrial Strategy must look to build on the competitive advantage of the UK and exploit its natural resources, this means utilising both onshore and offshore wind, and exploring the potential of designing and constructing tidal lagoons where the UK has some of the largest tidal differentials in the world. This will help in delivering regional regeneration through local employment, skills and tourism, as well as substantial benefits to the UK supply chain<sup>21</sup>.
- 3.31 The mechanisms to deliver the Government's energy priorities, as set out in the Industrial Strategy Green Paper, need to be flexible enough to enable new technologies and new applications of existing technologies to be deployed. These mechanisms include taxation, regulation and financial incentives. New technologies and new applications of existing technologies have the potential to contribute to lower energy costs for consumers, the UK's security of energy supply and the transition from fossil fuels to low carbon energy sources; however, inflexible regulation or poorly designed policies can act as arbitrary barriers to effective deployment.

**Recommendation: Government should work with local councils and stakeholders to deliver low carbon solutions within the energy sector, appreciating that there is not a one size fits all solution.**

**Recommendation: The Government should ensure that the Industrial Strategy is joined up with the National Infrastructure Assessment and local solutions to ensure that existing capabilities in energy infrastructure, skills and knowledge hubs are factored into future policy.**

#### 4. Delivering a low carbon economy at the lowest cost

##### *Refers to:*

*27. What are the most important steps the Government should take to limit energy costs over the long term?*

*28. How can we move towards a position in which energy is supplied by competitive markets without the requirement for ongoing subsidy?*

*30. How can the Government support businesses in realising cost savings through greater resource and energy efficiency?*

<sup>19</sup> Leeds City Gate, h21, <http://www.northerngasnetworks.co.uk/wp-content/uploads/2016/07/H21-Executive-Summary-Interactive-PDF-July-2016-V2.pdf>

<sup>20</sup> CCC, Next Steps for UK Heat Policy

<sup>21</sup> The Hendry Review, <https://hendryreview.wordpress.com/#content>

- 4.1 Energy costs are a significant contributor towards household welfare and living standards in the UK. In many sectors, energy costs are a contributory factor to competitiveness as well as productivity; as international competition increases, especially from emerging markets, Energy UK supports the emphasis the Government has placed on lowering energy costs within the Green Paper. Already highlighted in the Green Paper is the commitment the UK Government has made towards limiting policy costs on energy bills for the most intensive industries by up to around 80 per cent<sup>22</sup>. However, it should be equally noted that such intervention has the impact of increasing costs for other, non-exempt, consumers as these costs are redistributed. More must be done to support UK business in order to maintain their international competitiveness, without placing too much of the burden on households to pay for environmental and social schemes to ensure that the cost of energy is fairly allocated across consumers. Energy UK believe that action should not be done in the name of affordability at any costs as this could have unintended consequences on the other aspects of the trilemma, i.e. security of supply and decarbonisation.

#### **a) Future power market design**

### **28. How can we move towards a position in which energy is supplied by competitive markets without the requirement for ongoing subsidy?**

- 4.2 Energy UK considers that Government has established a framework through EMR that will deliver the investment required to meet both the decarbonisation targets and the security of supply standard, at lowest cost to consumers. Energy UK is currently undertaking analysis into the future power market design to look at the optimal framework for delivering a low carbon energy system. Market based competition is essential towards delivering the future energy investment and infrastructure requirements, and Energy UK will assess whether the main revenue streams in the GB market (Low Carbon, Capacity, Ancillary Services and Wholesale) work in conjunction with each other to deliver the objectives of the energy trilemma. Energy UK will look to answer how energy can be produced and supplied in the most competitive way. Energy UK will continue to engage with Government as our work progresses in this area.

### **27. What are the most important steps the Government should take to limit energy costs over the long term?**

#### **b) A post Brexit energy system**

- 4.3 Any industrial strategy must consider the wider trading arrangements in which it operates. In order to deliver the best outcome for UK energy customers from any Brexit negotiation, the energy sector identified in autumn 2016 the following key priorities<sup>23</sup>:
- minimising domestic policy uncertainty in order to encourage continued investment;
  - efficient trading of power and gas over the interconnectors to: enhance security of supply, promote competition and reduce costs by sharing available resources and capacities;
  - access to supply chain products free of tariffs and non-tariff barriers;
  - maintaining liquidity in both electricity and gas markets;
  - maintain State Aid rules broadly in line with the current policy given that they are already built into investment decisions and timelines; and,
  - ensure access to a skilled and mobile labour force.

- 4.4 Energy UK continues to support the Government in its negotiations with the European Union.

#### **c) Innovation from competition**

- 4.5 Competition creates innovation as firms and stakeholders look to capture increasing levels of market share, and in recent years we have seen growth in the number of suppliers in the energy retail market. This has facilitated greater competition in the market, with there now being over 50

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<sup>22</sup> BEIS, Building our Industrial Strategy Green Paper, January 2017

<sup>23</sup> Energy UK, Priorities for the energy sector following the UK's decision to leave the European Union

suppliers looking to engage customers in order to capture market share. Innovation in retail markets continues to progress, with firms offering products such as green tariffs and time of use tariffs as smart meters are rolled out. The Government should look to facilitate innovation in the retail energy market by allowing the market to present value to consumers through choice and competition. A lack of certainty and stability creates difficulties for businesses to plan and make strategic decisions and direct resources in an efficient way, with price regulation potentially reducing the impact of competition and consumer engagement. Any industrial strategy must therefore promote and support competition within markets in order to facilitate innovation and value for consumers.

**Recommendation: Allow markets to innovate by providing certainty to businesses through policy stability. Flexible regulation ultimately allows new innovation to be brought to market, creating benefits for both businesses and consumers.**

#### **d) Domestic energy efficiency**

- 4.6 Energy efficiency is an enduring solution to help consumers reduce their energy consumption, improve the comfort of their homes, and is central to achieving the Government's 2030 fuel poverty and 2050 carbon reduction targets. The energy industry has been actively supporting energy efficiency for over two decades and real progress has been achieved, with over 61 million energy efficiency measures installed since 2008. The Government's Industrial Strategy should focus more heavily on delivering domestic energy efficiency and supporting the supply chains in this sector that can add value to the UK economy.
- 4.7 There is, however, a concern in the industry that households and the energy efficiency sector are overly reliant on subsidies (including the Energy Companies Obligation (ECO) – which the Government has confirmed is set to continue until 2022). Energy UK strongly believes that the fairest and most progressive method of funding energy efficiency programmes is through general taxation. Supplier obligations (such as ECO) are financially regressive as the costs are distributed among energy consumers regardless of their ability to pay. Supplier obligations also inevitably creates winners (those who receive measure) and losers (those who cannot or do not receive measures). According to BEIS's own statistics, only 4.7%<sup>24</sup> of those households who have contributed towards the cost of ECO, including those in or at risk of energy poverty, are estimated to have benefited directly from the installation of measures.

**Recommendation: Government should take a progressive approach to funding efficiency through general taxation in order to lower costs for those living in fuel poverty.**

- 4.8 Furthermore, the top-down approach through obligations on suppliers has, in our view, led to an expectation that energy efficiency measures should be provided free of charge, undermining the value of energy efficiency to the public. Instead, the able to pay market needs to become sustainable.
- 4.9 The Industrial Strategy is an opportunity for positive change by refocusing on a long-term strategy around transitioning towards a competitive energy services market that is self-sufficient, demand-led and not dependent on subsidy raised through energy bills. This requires a policy framework that supports competition to its fullest potential to drive cost-efficiencies, and offers a range of products and services that suit the needs of different consumer audiences.
- 4.10 Energy UK believes Government should help kick-start a sustainable able-to-pay energy efficiency market via a combination of incentives and funding mechanisms to engage with

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<sup>24</sup> DECC, 'Domestic Green Deal, Energy Companies Obligation and Insulation Levels in Great Britain', Detailed Report, 17 September 2015

different consumer groups. These incentives should be supported appropriately by regulation to trigger demand in the market, and be underpinned by a long-term holistic Government strategy and consumer education campaign to promote demand.

- 4.11 In particular, Energy UK believes that a Stamp Duty scheme, coupled with access to finance, is worth particular attention as part of any future energy efficiency policy framework for the able-to-pay market. In order to facilitate customers' engagement, initiatives such as low interest bank loans and green mortgages could also be used to support the installation of high-cost energy efficiency measures.

**Recommendation: Energy UK supports Government promoting a vibrant able-to-pay market that can help drive energy efficiency improvements in the housing stock. In order to do this, Government should consider a combination of incentives and funding mechanisms, supported by appropriate regulation to drive demand and help all consumers reduce their energy costs.**

#### **e) Demand response and system flexibility**

- 4.12 As we move towards increasing levels of electrification in the transport and heating sectors, it presents new challenges for the energy system. UK policymakers have the opportunity to lay the policy foundations for a clean, flexible, sustainable and efficient energy system to work for the long term. A system that can not only secure our electricity supply but one that drives the economy through investment in cutting-edge low-carbon technologies and DSR, both keeping consumer bills as low as possible.

- 4.13 The recent 'Smart Power' report from the National Infrastructure Commission<sup>25</sup> sets out the benefits of increased system flexibility (interconnection, storage and DSR) and indicated up to £8bn in savings for consumers. These findings have been echoed in other work by Government<sup>26</sup>, the Committee for Climate Change<sup>27</sup> and Ofgem<sup>28</sup>. System flexibility allows Government to deliver security of supply, whilst bringing forward the cheapest forms of generation, including large volumes of variable generation. Providing a secure and reliable supply of energy in the future is no longer concentrating exclusively on the supply side, through building more and more capacity, but instead, allowing for adoption of technological innovation to better manage energy demand in homes and non-domestic properties.

#### **i) Demand response in the domestic sector**

- 4.14 DSR solutions provide flexibility in a digitalised energy system, potentially contributing to security of supply and potentially creating industrial opportunities from being a world leader in its development. As DSR continues to develop, the UK could gain from developing a supply chain base, with its use throughout UK homes and contributing to lowering energy costs: especially if it is implemented alongside complementary technologies such as smart appliances. Greater research and investment in specific skills to support the role of future flexibility needs to be undertaken, and greater solutions offered to support a whole systems approach type integration between DSR, EV's and smart technology. Consideration also needs to be given to how the market ensures that those in low income households, and less likely to engage in the energy market, are not left behind.

#### **ii) Demand response in the non-domestic framework**

- 4.15 The potential for cost-effective DSR technology within the non-domestic sector as a solution towards reducing peak demand depends on the flexibility of the end use of the electricity. Some

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<sup>25</sup> National Infrastructure Commission (2016), Smart Power

<sup>26</sup> Department of Energy and Climate Change (2012), Electricity System: Assessment of Future Challenges

<sup>27</sup> Committee on Climate Change (2015), Power sector scenarios for the Fifth Carbon Budget

<sup>28</sup> Ofgem (2015), Making the electricity system more flexible and delivering the benefits for consumers

industries will be characterised by demand inflexibility, where a constant and reliable supply of electricity is needed; whereas other industries will be much more flexible in demand for electricity, and with the right price incentives, could be willing to adjust their demand behaviour. This not only has the benefit of reducing peak demand and contributing to system balancing, it can also reduce the cost of energy for many businesses: making them more competitive and productive, with minimal impact on their production plans. Any strategy should build on National Grid's power responsive programme, encouraging non-domestics to understand their energy usage and potential to offer products and services<sup>29</sup>.

- 4.16 As the DSR market expands there is a risk that a lack of regulation may not provide adequate consumer protection for businesses; the market needs to be set up to ensure a correct level of protection for consumers and that value and cost is shared appropriately across participants.

**Recommendation: Government should provide long term policy support towards facilitating DSR in the non-domestic sector, ensuring regulation promotes its uptake and development.**

**Recommendation: BEIS and Ofgem should facilitate the development of a regulatory framework that facilitates DSR in the non-domestic setting, including by encouraging a vigorously competitive DSR aggregation market.**

#### f) Non-domestic energy efficiency

### *30. How can the Government support businesses in realising cost savings through greater resource and energy efficiency?*

- 4.17 Improving the efficiency of businesses energy use is an area of significant potential. Many energy efficiency measures are likely to be quicker and cheaper to deliver than capacity investment; the measures could reduce the need to invest in reinforcing the network to accommodate increased generation capacity, and they could contribute to improving non-labour productivity and resource efficiency. By creating a large enough market for energy efficiency that is demand led, it will also allow for wider economic benefits around supply chain development. Energy efficiency, therefore, represents an important opportunity with regards to bearing down on business costs and driving UK productivity and international competitiveness.
- 4.18 Research conducted by The Manufacturers' Organisation (EEF) found that an estimated 14% improvement in electricity efficiency is still available through cost-effective measures within the manufacturing sector, with a payback period of 20 months on average and no capital investment needed at all for most. This represents a potential 12 TWh reduction in annual electricity consumption (4% of the UK's annual supply). However the EEF also found that while most companies are already well aware of many energy saving opportunities, they were not taking them: this is often for financial reasons, or because they have preferences over other investment project areas. A lack of awareness towards the benefits that can be achieved from greater efficiency for businesses, and the need for Government to devise policy that will help businesses focus on such potential gains by switching from short term investment strategies to long term ones, is also highlighted in a report by the Manufacturing Commission<sup>30</sup>. There is clear need for a mind-set change at management level and this must be driven by Government policy and engagement if it is to be successful.
- 4.19 There is, therefore, potential scope for further engagement with businesses to articulate the benefits (productivity, staff comfort, lower energy bills and greater cost competitiveness) of energy efficiency and to drive demand. Government needs to promote cost-effective energy efficiency measures as an attractive investment for business. As in the domestic sector, this could

<sup>29</sup> Energy UK, EUK response the Smart Flexible Energy System call for evidence

<sup>30</sup> Industrial Evolution - Making British Manufacturing Sustainable - 2015

be achieved by Government via the introduction of incentives supported appropriately by regulation to trigger demand.

- 4.20 To help businesses act and make the most of any incentives more should also be done to help businesses access and navigate the financial support structures for energy efficiency measures.
- 4.21 In addition, we strongly support the Bonfield Review's recommendations to raise quality standards and strengthen the accreditation in the energy efficiency and renewable industries. This principle should not be restricted to the domestic market. This approach will drive up quality throughout the supply chain, ensuring that the market delivers the right solutions of a good standard and in the right places.

**Recommendation: Government must engage businesses by articulating the benefits of cost-effective energy efficiency measures and low carbon schemes and technologies, as well as promote the gains from long term investment strategies. It must look to create a market that is driven by demand for efficiency solutions and does not rely on subsidy.**

- 4.22 To this end, we note the existing energy assessment scheme – Energy Saving Opportunity Schemes (ESOS) - for organisations in the UK that meet the qualifying criteria. It represents a good starting point already in legislation to encourage businesses to think about how they can be more energy efficient, and where the cost effective opportunities to improve their organisation's energy efficiency lie.
- 4.23 It is important the Government provides clarification on the proposals on rebalancing of the Climate Change Levy (CCL) and the future of CCAs (Climate Change Agreements) once the current schemes end in 2023. If Government is to deliver on a single carbon reporting mechanism for larger businesses it must do so by minimising implementation costs, while ensuring companies understand the opportunities to save money (through greater efficiency in energy use). Businesses need early sight of the carbon reporting mechanism ahead of implementation – assumed to be April 2019 – so that those impacted can fully prepare.
- 4.24 All public sector organisations should be covered by carbon reporting mechanisms as a key to act as leaders for all other organisations. This could also be used as a route to help smaller businesses by utilising the experience of these organisations (particularly local authorities) to support increased efficiency and growth in their own areas/regions.
- 4.25 For smaller businesses, increasing access to data and information will help them to understand the economic benefits that more efficient energy use can bring. Government must, however, remain mindful that at this scale mandated reporting can be disproportionate in relation to effort/benefit for businesses. An appropriate balance needs to be struck.

**Recommendation: Energy UK encourage Government to publish its proposals to reform the business energy efficiency tax landscape reporting requirements, providing further clarity on the particular areas post 2023.**

- 4.26 Energy UK also believes there is the need for a strong framework in terms of what is expected of landlords when letting both non-domestic and domestic properties. In England and Wales, consideration should be given to redrafting and tightening the minimum Energy Performance Certificates (EPC) standards in the private rented sector for both non-domestic and domestic properties to drive-up energy efficiency standards. We continue to be disappointed with the lack of ambition set out in the regulations, particularly in the domestic sector where compliance continues to be linked to landlords being able to deliver improvements at no upfront cost via ECO of the Green Deal. BEIS's (then DECC) own impact assessment notes that the domestic standards are as a result unlikely to result in significant improvements as landlords will be able to avoid taking action in nearly half of all eligible properties. In the non-domestic sector, extending the requirement for public buildings to issue a Display Energy Certificate to commercial buildings

would be a good first step. To be effective, improvements to regulations must be accompanied by improvements to the enforcement regimes of both the EPC regulations and building standards more generally.

**Recommendation: Tax incentives and public sector loans must be developed in order to reduce payback periods.**

**Recommendation: Government should consider redrafting and tightening the minimum Energy Performance Certificates (EPC) standards in the private rented sector for both non-domestic and domestic properties to drive-up energy efficiency standards**

## 5. Delivering Science, Research and Innovation in the Energy Sector

*Refers to:*

*5. What should be the priority areas for science, research and innovation investment?*

*6. Which challenge areas should the Industrial Challenge Strategy Fund focus on to drive maximum economic impact?*

*9. How can we best support research and innovation strengths in local areas?*

*29. How can the Government, business and researchers work together to develop the competitive opportunities from innovation in energy and our existing industrial strengths?*

5.1 Science, research and innovation are key drivers of productivity and are essential towards maintaining economic growth. Innovation is the output of a successful science and research base, among other things, and in the UK, expenditure in the area of R&D spending has consistently lagged behind other countries in recent years, with only 1.67% of GDP being spent within R&D in 2014<sup>31</sup>. If the UK is to build a successful research base and gain the advantages of being a leader in technological development, more needs to be done to encourage investment at home and abroad to deliver a higher share of GDP expenditure. Policy stability and clear mission statements which highlight areas of support from Government will go some way to delivering this.

### a) Research lead development

*5. What should be the priority areas for science, research and innovation investment?*

*29. How can the Government, business and researchers work together to develop the competitive opportunities from innovation in energy and our existing industrial strengths?*

5.2 Energy UK would first like to highlight the support the Government has shown within the Green Paper for specific technologies such as offshore wind, smart grids, energy storage, hydrogen fuel technologies and nuclear. Although Energy UK supports the development of these technologies, there is a need for the UK's innovation funding to be open to a wider range of technologies in future in order to provide flexibility and security within the system.

5.3 Up until now, technologies such as CCS have had an unclear role and Government has removed financial support; if hydrogen is to be offered as a solution towards decarbonising the heat sector, CCS will likely have a clear role to play, as highlighted by the Committee on Climate Change. It will be important to further consider the role that CCS will play in industries such as steel, chemical and cement when competing in the low-carbon world<sup>32</sup>. Therefore, more research needs to be done both nationally and regionally to determine the overall benefits of such technologies and their feasibility in the long run. Government, through further research and trials, should look to develop a better understanding on the feasibility of CCS and its future requirements, which will depend on which technologies emerge in the electric and heat sectors.

<sup>31</sup> BEIS Select Committee, Industrial Strategy: First Review, 2017, <https://www.publications.parliament.uk/pa/cm201617/cmselect/cmbeis/616/616.pdf>

<sup>32</sup> CCC Letter to Amber Rudd, July 2016, <https://www.theccc.org.uk/wp-content/uploads/2016/07/Letter-to-Rt-Hon-Amber-Rudd-CCS.pdf>

- 5.4 The Network Innovation Competition (NIC) is an annual opportunity for electricity and gas network companies to compete for funding for the development and demonstration of new technologies, operating and commercial arrangements. Funding is provided for the best innovation projects which help all network operators understand what they need to do to provide environmental benefits, cost reductions and security of supply as Great Britain (GB) moves to a low carbon economy. Up to £81m per annum is available through the Electricity NIC and up to £18m through the Gas NIC. Currently, only a Network Licensee<sup>33</sup> can apply for the NIC; however, we consider that moving to full competition would allow other companies to compete in for contracts and would therefore reduce costs to consumers and support further innovation.

**Recommendation: Government should look to support further trials and research within CCS, green gas, and low carbon emerging technologies to determine their feasibility and appropriateness for meeting future requirements.**

**Recommendation: Government to open the NIC to all market participants.**

## b) Pro-active leader

### *29. How can the Government, business and researchers work together to develop the competitive opportunities from innovation in energy and our existing industrial strengths?*

- 5.5 Energy UK believes the UK's previous experience and first class skills base place it in a unique position to make further advances in a number of technologies that can provide decarbonisation at the lowest cost, by delivering competition as well as wider economic benefits from supply chains, employment and exports. Being a first mover in offshore wind has allowed the UK to benefit from exports in cable installation, repairing equipment, construction work and offering knowledge based consulting. The result is that many major economies such as China and the US are looking to learn from the UK in offshore wind technology. With the UK taking the lead, the rest of the world is now looking to follow and this brings many economic benefits, with many UK companies active in winning deals in Europe, the United States and Asia<sup>34</sup>. If these industrial opportunity benefits from energy innovation are to be realised in other technologies, the UK Government must act now to support those technologies that will provide significant economic benefits within the UK.

### *6. Which challenge areas should the Industrial Challenge Strategy Fund focus on to drive maximum economic impact?*

- 5.6 The Industrial Strategy Challenge Fund (ISCF) was set up by Government to help develop the UK's science and research base. The fund itself invests in science and innovation to help Britain capitalise on its strength in specific areas of research and innovation in disruptive technologies. The latest round of funding announced in the 2017 Spring Budget of £270 million<sup>35</sup> in 2017/18 looks to kick-start development in EV batteries, artificial intelligence and robotic systems as well as accelerating patient access to new drugs through developing brand new manufacturing techniques. Whilst Energy UK supports the use of the ISCF and its targeted technologies, Government, in meeting its decarbonisation goals and lowering consumer energy costs, should look to target further investment in technologies that specifically focus on this objective, in the energy and wider sectors.

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<sup>33</sup> A Network Licensee is the holder of an Electricity Transmission Licence or Electricity Distribution Licence, ie the National Electricity Transmission System Operator (NETSO), a Transmission Owner (TO) an Offshore Transmission Owner (OFTO), a Distribution Network Operator (DNO) or an Independent Network Operator (IDNO)

<sup>34</sup> Renewable UK, Exporting Offshore Wind,

[http://c.ymcdn.com/sites/www.renewableuk.com/resource/resmgr/Exporting\\_Offshore\\_Wind.pdf](http://c.ymcdn.com/sites/www.renewableuk.com/resource/resmgr/Exporting_Offshore_Wind.pdf)

<sup>35</sup> HM Treasury, 2017 Spring Budget,

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/597467/spring\\_budget\\_2017\\_web.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/597467/spring_budget_2017_web.pdf)

**Recommendation: Government needs to proactively support development of technologies that provide significant economic benefits. A clear narrative needs to be given on how stakeholders can access the finance, with more technologies included in the fund that focus on tackling decarbonisation and provide significant benefits in the future.**

### **c) Collaboration across the economy**

#### **9. How can we best support research and innovation strengths in local areas?**

- 5.7 If the UK is to achieve its decarbonisation goals at the lowest cost to consumers whilst achieving the wider economic benefits that complement the industrial opportunities of energy innovation, collaboration across industries and Government is required in order to ensure joined up thinking and a collaborative strategy. Technology innovation and research should have a bottom-up approach through working with local institutions and engaging with academics to ensure all applications are evidence based. In the future, the transport, heat and energy sectors will become increasingly interconnected, so it is becoming increasingly important that a collaborative approach is taken to ensure the systems and infrastructure in place meet future requirements.

**Recommendation: Government should engage with local institutions and academics to produce evidence based research as well as acting as a facilitator in the collaboration between sectors.**

## **6. Skills and Training**

### **Refers to:**

**13. What skills shortages do we have or expect to have, in particular sectors or local areas, and how can we link the skills needs of industry to skills provision by educational institutions in local areas?**

**14. How can we enable and encourage people to retrain and upskill throughout their working lives, particularly in places where industries are changing or declining? Are there particular sectors where this could be appropriate?**

- 6.1 A skilled, mobile and flexible workforce is an essential element for the success of the energy industry, now and in the future. Whilst the UK's energy industry continues to invest in talent for the future as well as training and re-skilling those who already work within the sector, it faces an ageing workforce, loss of experienced workers, and a critical shortage of engineering and technological skills<sup>36</sup>. A lack of STEM (Science, Technology, Engineering, and Mathematics) graduates, limited number of young people and women entering the sector are significant contributors to the issues the industry faces. Energy UK's members actively engage in STEM activities in schools and institutions, as well as hiring younger generation workers through a number of different routes, including apprenticeships and universities. Engaging with local authorities, local enterprise partnerships and the education sector through the STEM initiatives will have a clear role to play to overcome the challenges the energy sector faces – as well as the wider economy.
- 6.2 Energy UK endorses the latest report by the Energy and Utilities Skills Partnership titled 'Many skills, one vision' which looks at the needs for skills and workforce in energy and utilities by 2020, and will be working alongside them to support delivery.

### **a) A digital and smart connected energy industry**

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<sup>36</sup> UKCES, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/416998/15.03.25.\\_Energy\\_SLMI\\_-\\_evidence\\_report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/416998/15.03.25._Energy_SLMI_-_evidence_report.pdf)

**14. How can we enable and encourage people to retrain and upskill throughout their working lives, particularly in places where industries are changing or declining? Are there particular sectors where this could be appropriate?**

- 6.3 As the demands from the industry continue to change and we go through a transition to a low carbon economy, the industry continues to become increasingly digitalised and smart integrated which requires further skills in areas such as software, IT and digital engineering. It is important that Government and skills providers recognise these changing demands from a more traditional focus to an ever increasing digital skills base requirement.
- 6.4 The energy sector employs directly and indirectly over 630,000 people in the UK and this is forecasted to grow by 15.5% by 2022<sup>37</sup> as digital skills demand increases, networks expand and businesses increase their portfolios. There is an opportunity to create a virtuous circle of skills and jobs throughout the UK through a strong, flexible and adaptable supply chain. The smart meter rollout will likely require around 10,000 installers to be trained to deliver over a relatively short period of time<sup>38</sup>. The introduction of this technology creates new opportunities and demands on the energy labour force and provides an example of how technological development within an economy can not only make existing roles redundant, but create new ones also. A need to re-train and upskill existing workers as well as ensuring those entering the labour market hold the required skills ensures the labour force compliments the direction of economic development, providing benefits of increased productivity and living standards.
- 6.5 The likelihood of future coal closure means those currently working in that particular occupation will need to be re-skilled and trained in order that their skills remain relevant for future generation technologies<sup>39</sup>. Many energy companies work across the whole of the UK, so consistency among devolved Governments in terms of policy and regulation is crucial.

**Recommendation: Ensure the emerging strategies and policies for education and skills are well aligned with the Government's industrial strategy.**

**Recommendation: Better identify how the skills needed for the digitalisation and the decarbonisation of the energy industry are covered by the 15 routes to technical education.**

**13. What skills shortages do we have or expect to have, in particular sectors or local areas, and how can we link the skills needs of industry to skills provision by educational institutions in local areas?**

**b) Reforming education**

- 6.6 Tens of thousands of skilled workers are set to retire over the next ten years. According to the 2015 Employer Skills Survey 36% of hard-to-fill vacancies in the UK energy and utilities sector are driven by a lack of required skills – well above the 23% national average<sup>40</sup>.
- 6.7 Government has launched several reforms in the education and skill sector: technical education has been slimmed down to refocus on 15 routes. Three of these routes are very relevant to the energy sector: construction, engineering and manufacturing. However, it is not clear that they will actually cover specific areas such as low carbon technology or insulation technicians, who will be needed to support the supply chain for the decarbonisation of the UK. The Apprenticeship

<sup>37</sup> UKCES, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/416998/15.03.25.\\_Energy\\_SLMI\\_-\\_evidence\\_report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/416998/15.03.25._Energy_SLMI_-_evidence_report.pdf)

<sup>38</sup> Energy & Utilities Skills Partnership, RENEWAL AND SKILLS STRATEGY:2020, <http://www.euskills.co.uk/sites/default/files/Workforce%20Renewal%20and%20Skills%20Strategy%20FINAL.pdf>

<sup>39</sup> Many skills one vision Energy and utilities workforce Renewal and skills strategy:2020, <http://www.euskills.co.uk/sites/default/files/Workforce%20Renewal%20and%20Skills%20Strategy%20FINAL.pdf>

<sup>40</sup> Energy & Utilities Skills Partnership, RENEWAL AND SKILLS STRATEGY:2020, <http://www.euskills.co.uk/sites/default/files/Workforce%20Renewal%20and%20Skills%20Strategy%20FINAL.pdf>

levy is another reform coming into effect in 2017 and while it is well received by the industry overall, there is a need to recognise that there are different recruitment practices and to ensure that such new schemes do not negatively impact on other entry routes by displacing potential candidates (e.g. graduate schemes, University Technical Colleges (UTC)).

**Recommendation: Government must be forward looking and ensure that the skills of the future supply chain are covered in all educational routes to deliver a qualified and knowledgeable workforce at all levels, from contractors to managers.**

**Recommendation: Government must recognise that there are different recruitment practices and ensure that such new schemes as the Apprenticeship Levy do not negatively impact on other entry routes by displacing potential candidates (e.g. graduate schemes).**

**Recommendation: Continue to ensure University Technical Colleges (UTC) are promoted as a solid alternative to traditional STEM education.**

### **c) The role of STEM activities and engagement**

6.8 The STEM qualified workforce is very sought after and all industries are competing to recruit these graduates. Companies work hard with schools in their regions to encourage young people to take up STEM subjects or to use their STEM learning to develop innovative ideas (e.g. Project Reinvent by Drax). Industry also wants to carry on working with University Technical Colleges (UTC) which offer a solid alternative to the more traditional STEM education route.

6.9 Government should promote further collaboration between the private, the public and the education sectors, as well as other bodies such as skill providers and trade associations. There is a lot to gain from sharing skills and knowledge: businesses bring the experience of the real world while the public sector provides the policy knowledge and understanding and the education sector the fresh and innovative thinking on the world of the future. Government must encourage businesses to fund projects in association with universities and other educational bodies.

**Recommendation: Government should encourage businesses to fund projects in association with local universities and other educational bodies.**

## **7. Sector deals**

### *Refers to:*

**31. How can the Government and industry help sectors come together to identify the opportunities for a 'sector deal' to address – especially where industries are fragmented or not well defined?**

**32. How can the Government ensure that 'sector deals' promote competition and incorporate the interests of new entrants?**

7.1 At this stage, Energy UK does not intend to offer any sector deal to Government. Some members will be following this up directly with Government. As a trade association, Energy UK believes that Government has established a framework through the EMR that will deliver the investment required to meet both the decarbonisation targets and the security of supply standards, at lowest cost to customers. Energy UK believes that further steps can be taken to better deliver these aims and has provided a number of recommendations within this response in order to deliver this.

7.2 Energy UK agrees with the BEIS Select Committee<sup>41</sup>, that Government should set out its mission and let industry deliver through investment in R&D, manufacturing, supply chains and export potential. To all intents and purposes, Government has set out its broad parameters in energy through the Climate Change Act and meeting intervening carbon budgets; and given the right support and framework, the industry can deliver a low carbon energy system.

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<sup>41</sup> BEIS Select Committee, Industrial Strategy: First Review,  
<https://www.publications.parliament.uk/pa/cm201617/cmselect/cmbeis/616/616.pdf>