

Energy UK response to the Science and Technology Committee's inquiry into technologies needed to meet Clean Growth emissions reduction targets

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About Energy UK

Energy UK is the trade association for the GB energy industry with a membership of over 100 suppliers, generators, and stakeholders with a business interest in the production and supply of electricity and gas for domestic and business consumers. Our membership covers over 90% of both UK power generation and the energy supply market for UK homes. We represent the 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.

Our members turn renewable energy sources as well as nuclear, gas and coal into electricity for over 27 million homes and every business in Britain. Over 680,000 people in every corner of the country rely on the sector for their jobs, with many of our members providing long-term employment as well as quality apprenticeships and training for those starting their careers. The energy industry invests over £12.5bn annually, delivers around £84bn in economic activity through its supply chain and interaction with other sectors, and pays £6bn in tax to HM Treasury.

Executive Summary

1. Energy UK welcomes the opportunity to provide this submission to the Science and Technology Committee's inquiry into technologies needed to meet Clean Growth emissions reduction targets.
2. Energy UK also welcomes the ambition of the UK's Clean Growth Strategy (CGS) and considers all four of the areas outlined ('Improving Our Homes'; 'Accelerating the Shift to Low Carbon Transport'; 'Delivering Clean, Smart, Flexible Power'; and 'Enhancing the Benefits and Value of Our Natural Resources') to be important. Within each area there are priority actions which we consider require urgent Government support and which we have set out below.
3. The success of the policy framework and government support, that has resulted in significant emissions reductions in the power sector, now needs to be replicated in those sectors whose emissions have remained relatively constant until now. As a result of the early action by the power sector, there is an opportunity to use low carbon power to decarbonise other sectors such as transport, heat and energy-intensive industries.
4. Energy UK considers that Government should support the deployment of competitive low carbon technologies via existing market frameworks (such as Contracts for Difference (CfD)), whereas for nascent technologies, Research and Development (R&D) and investment is required to continue their development and ultimately achieve the cost reductions required to stimulate wider uptake.

Renewables

5. Established renewable technologies such as onshore wind and solar PV are the lowest cost form of large-scale generation, meaning they can make a highly cost-effective contribution towards meeting the UK's carbon budgets. However, since the first CfD auction in 2015, Government has not held any additional auctions for Pot 1 technologies (covering established

technologies such as onshore wind and solar PV), effectively denying them a route-to-market despite these technologies demonstrating substantial cost reductions and decarbonisation benefits for consumers.

6. As part of the Government's review of the Electricity Market Reform (EMR) package, which is due to conclude in summer 2019, Energy UK has called for BEIS to change its position and allow Pot 1 technologies to compete for a CfD contract. Currently, the robust local planning rules ensure that such developments are supported by local communities.
7. The recent announcement by the Minister for Energy and Clean Growth, Rt Hon Claire Perry MP, that the next CfD Auction will open in May 2019, and that Government intends to run subsequent auctions around every two years thereafter, is fully supported by Energy UK. In this context, we note and welcome Government's ambition to deliver 1-2GW of new offshore wind every year in the 2020s, with the volume of capacity procured being dependent on the prices in the auction. This announcement is an important contribution in terms of providing the stable long-term framework needed to promote long-term investment, ultimately enabling the UK's thriving offshore wind supply chain to drive down costs further.
8. The dramatic fall in the costs of offshore wind, with a 50% reduction in the strike price between the first CfD allocation round in 2015 and the second allocation round in 2017, illustrates what can happen when industry and Government work together to reduce costs. A continuing integrated approach can deliver further cost reductions while effectively managing the challenges of intermittency and system stability, as renewable sources become the predominant category of generation.

Decarbonisation of Heat

9. A range of options is possible to decarbonise heat in the UK, including electric heat pumps, hybrid heat pumps and low carbon gases such as hydrogen. Developing a comprehensive evidence base on how different solutions work in practice through large scale trials is vital in the shorter term. In the longer term, it will be necessary for Government to address barriers, including high consumer equipment costs, to drive consumer take-up. Whilst a range of viable options for decarbonisation exists, appropriate business models and interactions across the range of solutions will need to be further explored.
10. Furthermore, it is important to recognise that heat has a potentially important role to play as part of a smart, flexible energy system, as seen in work by Energy UK members in the 'FREEDOM project'¹ and in Smart Electric Heat². Heat resources represent a valuable source of flexibility that could reduce the upfront cost of low carbon heating systems and enable heat to be decarbonised at least cost.
11. Carbon Capture Use and Storage (CCUS) could play an important role in the effective decarbonisation of heat and is discussed in more detail below.

Electrification of Transport

12. As of 2016, the transport sector overtook the power sector as the main source of greenhouse gas (GHG) emissions in the UK. It is also the biggest emitter of NO_x, notably from internal combustion engine vehicles (ICEVs). These are particularly harmful in high concentrations around main roads and therefore a major concern for those living in big cities and towns.
13. Energy UK therefore agrees with the prioritisation of 'Accelerating the Shift to Low Carbon Transport', but also recognises that cutting emissions from transport has been particularly challenging to date.

¹ <https://www.westernpower.co.uk/projects/freedom>

² <https://www.ovoenergy.com/binaries/content/assets/documents/pdfs/newsroom/vcharge-smart-electric-heat-white-paper-2017.pdf>

14. Nonetheless, electric vehicles (EVs) now offer the opportunity to leverage the progress made in the power sector. Ambitious, high-level targets, such as the UK Government's target to end the sale of conventionally fuelled vehicles by 2040 have been important in providing certainty and confidence to industry.
15. With major car manufacturers switching their focus to EVs (e.g. Nissan, BMW, Volvo, VW, etc.), the shift towards electrification of road transport is already initiated and EVs are approaching cost parity with ICEVs.
16. Energy UK is strongly supportive of the rollout of EVs and would like to see a high level of ambition from the UK Government.
17. The user experience must be central to the transition from ICEVs to EVs. Widespread adoption of smart charging, will be critical to ensuring the most cost-effective integration of EVs into the electricity system (in particular to limit increases in peak demand). As smart charging standards are taken forward in the UK and other European markets, it will be important that they are based around promoting consumer choice and providing compelling offerings.
18. One technical capability which would enable greater efficiency in smart charging of EVs is enabling a charge point to measure the vehicle's state of charge (how full the battery is in the EV). This is not currently possible for AC charging, and imposes a limitation on automatic understanding of the actual potential flexibility within a smart charging event. It would be possible for this information to be sent down the "pilot line" from the car to the charge point, but implementation of this has arguably been resisted by the automotive sector.

Carbon Capture Use and Storage (CCUS)

19. As stated above, we consider that substantially more progress is needed to assist the transport, heat and energy-intensive industry sectors in their decarbonisation efforts; progress which will depend heavily on developing a robust Carbon Capture Usage and Storage (CCUS) industry with sufficient transportation and storage infrastructure.
20. There are also promising opportunities for the deployment of CCUS in sectors where there are few alternatives for decarbonisation, such as certain industrial processes. The Committee on Climate Change (CCC) has concluded that deploying CCUS is the most cost-effective pathway to decarbonisation in these difficult-to-reach sectors. Negative emissions from Bioenergy Carbon Capture Use and Storage (BECCUS) in electricity generation could be particularly advantageous to offset emissions in other sectors that are more difficult or expensive to decarbonise.
21. Given that gas-fired generation is likely to be important in providing capacity and balancing services, and electricity generation with CCUS can provide an 'anchor project' to allow industrial clusters to decarbonise using the nearby CCUS transportation infrastructure, this technology could play an important role in allowing the UK, and the power sector itself, to decarbonise in the most cost-effective way.
22. If CCUS becomes cost-effective, it could provide a source of firm and flexible power generation alongside nuclear and renewables as the reliance on unabated gas-fired generation is reduced. The availability of firm low-carbon resources, such as CCUS and nuclear generation, will be critical for fully de-carbonising the energy system³. The extent of CCUS's role will depend on how competitive it is against other low carbon generation technologies in terms of its impact on whole system costs.

Energy Efficiency

23. Under 'Improving our Homes', Energy UK would like to see Government support more energy efficiency measures. Energy UK has long called for energy efficiency to be taken forward as a

³ <https://www.theccc.org.uk/wp-content/uploads/2018/06/Imperial-College-2018-Analysis-of-Alternative-UK-Heat-Decarbonisation-Pathways.pdf>

national infrastructure priority alongside the introduction of a National Energy Efficiency Programme and net-zero carbon newbuild standards.

24. Energy efficiency is an enduring solution to help consumers reduce their energy consumption and 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.
25. Industry has however, long been concerned 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 2028). 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.
26. 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.
27. There is a need for a positive change in how we approach energy efficiency in England, refocusing on a long-term strategy around transitioning towards a competitive energy services market that is self-sufficient, demand-driven 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.
28. Energy UK considers that Government should help kick-start a sustainable able-to-pay energy efficiency market via a combination of incentives and funding mechanisms to engage with 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.
29. To this end, Energy UK would strongly encourage the Committee to read the Frontier Economics report commissioned by the Energy Efficiency Infrastructure Group (EEIG): "*Affordable Warmth, Clean Growth*"⁴. The report, is an action plan for a comprehensive building energy infrastructure programme that takes a holistic view of what steps Government should take to fill the energy efficiency policy gap in the United Kingdom. Energy UK is a member of the EEIG and is a strong supporter of the action plan outlined in the report.

Digitalisation

30. Over the past decade, utilities and energy businesses have introduced digital innovation to optimise processes while new technologies and services continue to disrupt and transform the traditional power sector value chain. The digital future of the electricity system will require the UK to make smart grids a reality so as to integrate centralised and decentralised technologies, and promote customer participation in a secure, flexible and cost-effective manner.
31. Digitalisation has the potential to facilitate cost-effective decarbonisation, with digital technologies being essential in terms of integrating distributed energy resources (such as renewables, storage and demand response) as well as helping them interact optimally and efficiently.
32. The deployment of monitoring capabilities on distribution networks should be progressed quickly across the UK, as visibility on low voltage networks can not be dependent on smart meter data. Visibility on distribution networks is vital to successful local markets for flexibility and to encouraging market actors to deploy appropriate technologies in the right areas.

⁴ https://docs.wixstatic.com/ugd/211ae0_91357318ee584e2c841b438cfb11f50e.pdf

33. There is a need for a broader review of building standards aligned with the update of Standard Assessment Procedure and integration of smart technology into Energy Performance Certificate (EPC) recommendations, as outlined in the actions of the BEIS / Ofgem Smart Systems and Flexibility Plan.
34. The GB-wide rollout of smart meters will see the digitalisation of metering, and with it will come customers' ability to use this data for their benefit, both in driving suppliers to provide more innovative tariffs in order to drive down their energy costs, and in understanding their real time usage and levels of energy efficiency.