E.ON response to 'Building a zero-carbon economy' – Call for Evidence by the Committee on Climate Change

About E.ON

1. E.ON is one of the largest energy companies in the world focussed on clean growth. As of 2016, we took the major strategic decision that our company would no longer own or operate large-scale, conventional fossil-fuelled power stations. Today, our business is focussed on supporting Governments across the world deliver the technology required for clean growth. We believe the future of energy is decentralised, decarbonised, digitalised and local, with customers in control.

2. In the UK, we are a major employer with over 9,000 employees. In 2017, over 90% of the 4 billion KWh of energy we produced in the UK was from renewable sources. We have over 6 million customers in the UK, and over 31 million Europe-wide. Across Europe, we operate over 1 million km of energy networks.

3. Over the last decade, we have invested more than £2.5 billion in to new renewable energy in the UK. In 2018, we commissioned our latest offshore wind farm in the UK, Rampion, off the coast of Sussex. The project generates enough clean energy to power half the homes in both East and West Sussex.

4. E.ON is active in supporting homes and businesses become smarter and more energy efficient, enabling flexible demand response with technologies such as solar panels coupled with battery storage, virtual power plants and energy management systems. In the UK, we have installed more than one million energy efficiency measures in homes nationwide, saving more than 15 million tonnes of CO2 over the lifetime of those installations, and work with major brands and business across the UK and Europe to cut emissions and costs.

5. E.ON is also a market leader in delivering good quality, efficient heat networks to major housing and industrial developments, such as the Elephant Park project in London which will deliver 2,500 carbon neutral new homes and the Blackburn Meadows energy hub in Sheffield which uses locally-sourced waste wood to run a heat network and also hosts one of the first grid-scale battery storage sites that supports the day to day efficient operation of the National Grid.

6. Our response to selected questions can be found below.

Part 1: Climate Science

Question 1 (Climate Science): The IPCC's Fifth Assessment Report and the Special Report on 1.5°C will form an important part of the Committee's assessment of climate risks and global emissions pathways consistent with climate objectives. What further evidence should the Committee consider in this area?

7. No comment provided.

Question 2 (CO2 and GHGs): Carbon dioxide and other greenhouse gas gases have different effects and lifetimes in the atmosphere, which may become more important as emissions approach net-zero. In setting a net-zero target, how should the different gases be treated?

8. The guiding principle should be to increase ambition whilst maintaining consistency with the current accounting methodology. In order to provide continued confidence and credibility with existing climate change legislation, we believe that it is important for the UK to maintain a GHG reduction target based upon the existing basket of six greenhouse gases, as set out within the Climate Change Act 2008.

9. However, we also believe there is merit for policy makers to be provided with a clear indication of the effect of increasing the UK's GHG reduction ambition for future carbon dioxide emissions. For instance, a move to a legally binding 90% GHG reduction target may equate to a net zero carbon target for the UK.

Part 2: International Action

Question 3 (Effort share): What evidence should be considered in assessing the UK's appropriate contribution to global temperature goals? Within this, how should this contribution reflect the UK's broader carbon footprint (i.e. 'consumption' emissions accounting, including emissions embodied in imports to the UK) alongside 'territorial' emissions arising in the UK?

10. E.ON supports the EU Emission Trading System (ETS) and efforts to extend similar trading schemes in the interest of eventually moving towards a harmonised global cost of carbon. However, recent Brexit discussions have questioned whether the UK will continue to participate in the EU ETS going forward. In particular, there has been increased interest in the creation of a domestic carbon tax to ensure that sectors currently covered by the trading scheme continue to internalise an appropriate cost of carbon.

11. Notwithstanding our continued support for a European wide emissions trading system, E.ON believes that it is essential that all sectors internalise a meaningful cost of carbon. If political events make it necessary to achieve this outcome via a domestic carbon tax, we can envisage this solution eventually being extended beyond large industrial emitters and the electricity sector to assist with the decarbonisation of other sectors such as heat and transport. If a decision is at some stage in the future taken by the UK to introduce a UK wide carbon tax, we believe that the rate should be informed by the CCC and transparently aligned to the delivery of the UK's carbon budgets.

12. The introduction of a domestic carbon tax as a replacement for the EU ETS will lead to a renewed debate over carbon leakage. As part of any change, it would be prudent to consider the role that any border carbon adjustments could play, not only in protecting against carbon leakage in the event that the UK takes a leadership role on this, but also recognising the embodied carbon emissions that imports coming into the UK will have. The longer-term preference would be to avoid the need for such adjustments through the adoption of a robust international regime, but this will require the internalisation of an equivalent carbon cost in all exported products. Furthermore, it is clear that any proposals that seek to apply a border carbon adjustment is part of broader trade policy, and so it is not clear the extent to which this approach will survive any intense negotiations as the UK seeks to strike new independent trade deals.

Question 4 (International collaboration): Beyond setting and meeting its own targets, how can the UK best support efforts to cut emissions elsewhere in the world through international collaboration (e.g. emissions trading schemes and other initiatives with partner countries, technology transfer, capacity building, climate finance)? What efforts are effective currently?

13. No comment provided.

Question 5 (Carbon credits): Is an effective global market in carbon credits likely to develop that can support action in developing countries? Subject to these developments, should credit purchase be required/expected/allowed in the UK's long-term targets?

14. The Clean Development Mechanism (CDM), which enables sub-national actors to transfer emissions reductions in one country towards Nationally Determined Contributions (NDCs) in another country, is no longer fit for purpose and highlights the policy challenges of establishing an effective global market in carbon credits that can support action in developing countries.

15. Some of the problems associated with the CDM framework include the environmental integrity of the 'additional' emissions reductions, which in many cases would have been achieved even in the absence of the project receiving Certified Emissions Reductions (CER) credit and the historically low level of CER, which has dampened the demand for new projects.

16. The report by the OECD on 'Effective Carbon Rates 2018: Pricing Carbon Emissions Through Taxes and Emissions Trading', outlines the gap between effective carbon rates and real climate costs. Based on current rates of change, carbon prices will only reach parity with real climate costs by 2095, highlighting the fundamental importance of more ambitious carbon pricing, which is unlikely to be achieved under the CDM framework.

17. The Paris Agreement outlined the need to develop a new sustainable development mechanism that will replace the CDM beyond 2020. Any such mechanism must deliver greater transparency on the creation and tracking of credits, robust verification methods to quantify the emissions avoided by each project, a clear framework for how the interlinkages with other markets will operate and a strong regulatory body to enforce market rules.

18. Ultimately, to successfully limit global warming to no more than 1.5°C, all countries must take responsibility for their own emissions and set ambitious targets to rapidly decarbonise. Therefore, rather than offsetting emissions, the UK's long-term targets should be achieved through domestic carbon pricing and incentivising mitigation measures in the UK. Should the UK engage with a potential future global market in carbon credits, far more stringent regulation must be enforced by the international community, to ensure that real and substantial emissions reductions are being achieved.

Part 3: Reducing emissions

Question 6 (Hard-to-reduce sectors): Previous CCC analysis has identified aviation, agriculture and industry as sectors where it will be particularly hard to reduce emissions to close to zero, potentially alongside some hard-to-treat buildings. Through both low-carbon technologies and behaviour change, how can emissions be reduced to close to zero in these sectors? What risks are there that broader technological developments or social trends act to increase emissions that are hard to eliminate?

19. Progress on reducing emissions from the industrial sector has so far been limited, and we accept that in the short term there are no easy answers. The energy intensive sector has traditionally had a major focus on reducing their energy costs, as this directly impacts their competitiveness. The remaining heat and steam requirements they have are met largely by fossil fuels. However, there are options that could be considered to help reduce emissions from these processes, including the role of CHP and the opportunities that hydrogen could provide. Whilst we do not see a world in which hydrogen is deployed at scale across the country, it could make an important contribution to the industrial sector. The extent to which this is deployed will

ultimately be dependent on cost and feasibility. There remains considerable uncertainty over the role of hydrogen, and clear risks around the ability to drive emissions close to zero if this is unable to be commercially deployed.

Question 7 (Greenhouse gas removals): Not all sources of emissions can be reduced to zero. How far can greenhouse gas removal from the atmosphere, in the UK or internationally, be used to offset any remaining emissions, both prior to 2050 and beyond?

20. The IPCC report 'Global Warming of 1.5°C' highlights that it is possible to achieve a net zero target, whilst limiting average warming to 1.5°C and avoiding overshoot, via emissions trajectories which rely on no or limited use of negative emission technologies. We believe that such an approach should be the basis of the Committee's advice to Government.

21. The concept of a 'silver bullet' Negative Emissions Technology (NET) risks holding back short-term policy ambition. Integrated assessment models which incorporate hypothetical NETs in to future pathways to reaching the 1.5˚C target, as outlined in the Paris Agreement, do not account for the challenge of researching, developing, constructing and operating these technologies on a global scale and cannot compensate for inadequate mitigation.

22. Examples of NETs which may facilitate GHG removal from the atmosphere include bioenergy with carbon capture and storage (BECCS), enhanced weathering, ocean fertilisation and direct air capture and carbon storage (DACCS).

23. Some of the risks associated with NETs, include high operational uncertainty, high costs and major potential impacts on marine and terrestrial ecosystems. Even if some NETs become technologically feasible and cost-effective, there may be significant political, social and environmental barriers related to public acceptance and the precautionary principle.

24. Soil carbon management and reforestation represent some of the most technically credible approaches to GHG removal from the atmosphere. However, continued soil degradation and deforestation are adding CO_2 to the atmosphere. Controlling the loss of forest biomass and the restoration of soil carbon levels should therefore become a policy priority.

25. BECCs features significantly in future 1.5˚C scenarios. However, the cost and efficiency of Carbon Capture Usage and Storage (CCUS) technology and the required large-scale production of biomass fuel represent barriers which may limit the contribution of this NET to future GHG removal. Energy consumption in the biomass supply chain means that a significant proportion of the CO_2 captured in crop growth would be released using existing, available technologies.

26. Warming could be limited to 1.5˚C above pre-industrial temperatures without using NETs. Implementation of greater energy efficiency measures, energy savings made through policy and technological mechanisms, rapid deployment of renewables, electrification of heat and transport and land use management changes all represent ambitious, but more technologically and economically feasible approaches to limiting emissions than NETs.

Question 8 (Technology and Innovation): How will global deployment of low-carbon technologies drive innovation and cost reduction? Could a tighter long-term emissions target for the UK, supported by targeted innovation policies, drive significantly increased innovation in technologies to reduce or remove emissions?

27. No comment provided.

Question 9 (Behaviour change): How far can people's behaviours and decisions change over time in a way that will reduce emissions, within a supportive policy environment and sustained global effort to tackle climate change?

28. E.ON believes that consumer awareness in the UK with respect to climate change and a need to act differently is high. However, barriers to achieving effective behavioural change are myriad and complex. We have restricted our answer by seeking to address consumer decisions in the 'able to pay' market for domestic energy efficiency measures. This helps to explain why consumers are deprioritising energy efficiency over other competing demand for investment.

29. More than two decades of supplier obligations has led to a perception that energy efficiency measures should be provided free of charge. Whilst this is an important function within the market for those consumers who cannot afford to invest in energy efficiency, this may inadvertently have contributed to a position where most consumers do not consider it necessary to invest in energy efficiency themselves. Instead, many choose to simply use and pay for more energy to achieve a desired level of comfort for their home.

30. Consumer behaviour needs to change and, in order to achieve this, attitudes need to change. Major change like this can be triggered by a crisis (like the oil crisis which led to Denmark converting to district heating to improve its energy security) however, in the absence of such a trigger, behavioural change needs to be effected in a more deliberate and managed way. In the case of building a market for energy efficiency, action needs to be taken to drive demand through the use of coordinated incentives and regulation, underpinned by a long-term trajectory for raising standards over time.

31. Decarbonising heat over the coming years requires the Government to have much greater ambition on energy efficiency. Whilst we recognise the well documented deficiencies of the Green Deal, lessons must be learned and an alternative national framework put in place to make it in households' interests to want to invest in energy efficiency measures.

32. There is no silver bullet, but tax incentives (such as stamp duty rebates) and regulation (minimum performance standards) can help to create a premium in the housing market to reflect better insulated and lower carbon homes. These approaches will help facilitate the growth of Green Mortgages, enabling many households and landlords to fund investment to improve the EPC rating of their properties without paying the associated upfront costs.

Question 10 (Policy): Including the role for government policy, how can the required changes be delivered to meet a net-zero target (or tightened 2050 targets) in the UK?

33. To successfully deliver a net-zero target, an ambitious policy framework must be put in place to incentivise electrification of heat and transport and sustain the deployment of domestic renewables.

34. The introduction of a carbon price for gas in the heating market would go some way to addressing the current market distortion between the different fuel options available for heating homes, given that carbon pricing already applies to electric heating but is largely absent when it comes to gas. Furthermore, policy costs are largely focussed on electricity which amplifies this distortion. However, the way in which the application of a carbon price for gas is implemented needs to be carefully considered given the implication this will have for customers.

35. The ban on sales of new conventional petrol and diesel cars and vans in the UK by 2040 outlined in the Road to Zero strategy should be more ambitious and brought forward to 2030. Innovative Time of Use tariffs and smart charging functionality will limit the required investment in distribution network infrastructure and new generating capacity, by enabling solution providers to optimise the charging regime and provide new vehicle to grid services. In order to sustain and accelerate the uptake of Electric Vehicles (EVs), fiscal incentives must remain in place in the short term. A clear framework outlining how the Government will support a transition away from subsidies over the medium term should be produced once EVs reach retail parity with conventional petrol and diesel vehicles.

36. Green mortgages that enable customers to spread the upfront costs and tax incentives such as reduced stamp duty, encourage customers to invest in solutions such as solar that deliver a higher energy performance for their homes. Failure to put in place the appropriate incentives risks stalling growth in domestic renewables and could limit the UK's capacity for flexible, decentralised generation, one cornerstone of smart networks.

37. Small scale renewable generation impacted by the removal of support via the Feed In Tariff Scheme, will require a new supportive post subsidy framework. As a bridge to the advent of local flexibility markets there is a strong case for retaining an export tariff as a backstop until such time that consumers can actively participate in these markets. In the interim period, whilst the smart meter roll-out completes and settlement reform is developed, a guaranteed route to market could have a role to play in maintaining deployment levels and protecting supply chains. The resultant export tariff should not be regarded as a subsidy, instead the export rate should be set at a level which fairly reflects the value of the electricity returned to the system.

Part 4: Costs, risks and opportunities

Question 11 (Costs, risks and opportunities): How would the costs, risks and economic opportunities associated with cutting emissions change should tighter UK targets be set, especially where these are set at the limits of known technological achievability?

38. No comment provided.

Question 12 (Avoided climate costs): What evidence is there of differences in climate impacts in the UK from holding the increase in global average temperature to well below 2°C or to 1.5°C?

39. No comment provided.

Part 5: Devolved Administrations

Question 13 (Devolved Administrations): What differences in circumstances between England, Wales, Scotland and Northern Ireland should be reflected in the Committee's advice on long-term targets for the Devolved Administrations?

40. No comment provided.

Part 6: CCC Work Plan

Question 14 (Work plan): The areas of evidence the Committee intend to cover are included in the 'Background' section. Are there any other important aspects that should be covered in the Committee's work plan?

41. No comment provided.

E.ON - December 2018