centrica

Committee on Climate Change
Building a zero-carbon economy – Call for Evidence

Centrica plc
4th December 2018

About Centrica

• We are an international energy and services company focused on satisfying the changing needs of our customers.

• Our 30,000 employees work hard to deliver for our customers and for society. Our investment is increasingly shifting towards our customer-facing businesses, with our areas of focus being Energy Supply & Services, Connected Home, Distributed Energy & Power (DE&P), Energy Marketing & Trading (EM&T) and the optimisation of our Central Power Generation.

• We serve our 25 million customer accounts across our businesses through strong brands with distinctive capabilities which include British Gas in the UK, Bord Gáis Energy in the Republic of Ireland and Direct Energy in North America.

• We provide market-leading products and services that give customers greater choice, control and understanding over their energy, this includes our expected £1.2bn investment in our new global Connected Home and Distributed Energy & Power businesses (DE&P) during 2015-20.

• As part of this £1.2bn investment, we announced the construction of a 49MW battery storage facility at Roosecote and a £19m pioneering local energy market trial in Cornwall. The trial will test flexible demand, generation and storage, which supports increased use of renewables.

• DE&P also focuses on delivering efficient heat and power to the non-domestic sector, using combined heat and power (CHP) together with smart technology to optimise energy use and deliver carbon savings.

• We have some gas-fired power generation in the UK and RoI, and are also a sizeable gas and oil producer. While we are reducing the scale of these operations, we will expand our trading capabilities to secure diverse and competitive supplies on the global market. For example, in 2016 we acquired NEAS Energy, whose renewable energy trading and Virtual Power Plant (VPP) platform allows commercial and industrial customers to aggregate and optimise distributed energy loads and resources.

• Centrica is interested in future trends and business and therefore, last year we announced a new £100m venture Centrica Innovations that will identify, incubate and accelerate new technologies and innovations to support energy and services.

Question and response form

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?

ANSWER:
(no answer)

Question 2 (CO_2 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?

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(no answer)

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?

ANSWER:

We believe the UK's contribution to global temperature goals should be based on territorial emissions arising in the UK, in the absence of another better available carbon accounting method.

Accounting of carbon emissions is imperfect, as it does not take into account emissions generated by products imported from outside the UK. This results in competitive distortions between domestic products covered by the EU ETS and imports from regions of the world that do not have a carbon pricing scheme in place. The committee could advise the Government on how to establish a level-playing field between domestic production and imports. One option would be to look into the feasibility of developing a carbon border tax on the borders of European countries part of the EU ETS (or linked to it).

Another competitive distortion exists between power imported through interconnectors and power produced by GB generation assets, as the latter are covered by the Carbon Floor Price. This increases GB power prices relative to the rest of Europe and favours electricity imports over GB generation assets. A carbon border tax should therefore also cover energy imports to address this distortion, ensuring low carbon domestic generation is not potentially displaced by higher carbon EU generation.

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?

ANSWER:

Carbon pricing is the most cost-efficient way to drive carbon reductions. After Brexit, the UK Government has announced its intention to link a UK Emissions Trading System with the EU ETS, which we support. This option would be similar to the Swiss approach, who have a domestic carbon market and are currently undertaking modifications to link to the EU ETS in 2020. This process should lay the groundwork for other markets to link to the EU ETS in the future and will make it easier when the UK decides to link its own system. Building on its experience, the UK should further encourage the EU to link to other regional emissions trading schemes (e.g. the future China ETS). The cost-efficiency of the overall

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system increases as the size of the carbon market increases. An internationally-agreed carbon price covering all sectors of the economy remains ideal, and it is vital for governments to jointly pursue it.

The UK should work closely with the EU to reinforce its leadership role in global climate diplomacy and safeguard a global level playing field across sectors and across geographies. The EU must support developing countries to meet their commitments under the Paris Agreement and assist them with setting up robust carbon pricing mechanisms including transparent metrics for monitoring, reporting and verification. After Brexit, the UK should endeavour to remain closely associated with these efforts, with a view to complementing EU action and leading by example whenever possible.

We also welcome the UK Government's efforts to help developing countries transition to cleaner, greener energy systems and support communities affected by climate change. Last September the Government announced funding support of at least £5.8 billion of funding between 2016 and 2020 to help developing countries. This work done through UK International Climate Finance (ICF) should continue beyond 2020, both for mitigation and adaptation efforts.

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?

ANSWER:

Carbon credits can indeed support climate action leading to emissions reductions in developing countries, but these should be accompanied by robust oversight to ensure projects deliver measurable and substantial carbon reductions.

The purchase of international carbon credits should be permitted but there need to be tough rules to ensure these schemes are not exploited / subverted as they have been in the past.

The CCC has in previous Carbon Budgets given advice to government on the extent to which carbon credits could be used to achieve Carbon Budgets commensurate with the cost-effective path. This advice is important and should be continued for future Budgets.

More widely, we believe a long-term, economy-wide EU (or international) credit offset proposal should be considered. The IPCC sets a global challenge. It is only right that countries able to decarbonise particular sectors fastest should be incentivised to do so, and those that genuinely cannot reach full decarbonisation, have the means to offset emissions. We would encourage the CCC to provide a realistic analysis of the abatement potential of various UK sectors with this mechanism in mind.

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?

ANSWER:

We would advise the CCC to consult a recent report by the Energy Transition Commission ("Mission Possible", November 2018) that particularly examines these harder-to-abate sectors. With a combination of demand-side measures (increased use of recycling and circular economy systems) and the uptake in decarbonisation technologies (CCUS, bioenergy, electrification and hydrogen), the report argues that these sectors can reduce their emissions to net zero at low cost to the global economy by 2060.

In the medium-term, we believe significant carbon emissions reductions could be achieved in the industrial sector thanks to distributed energy solutions. In a recent report developed by Centrica ("Distributed Energy - Powering Sustainability", October 2018), we argue that, if just 50 per cent of organisations in the industrial sector adopted distributed energy solutions, annual emissions savings of 7.2 MtCO2e could be achieved. That's equivalent to 11 per cent of sector's current carbon footprint. By 2030, total cumulative emissions saving would amount to 106 MtCO2e. Distributed energy solutions include high-efficiency cogeneration, solar PV, battery storage, Demand-Side Response (DSR) and the generation of insights through real-time data analytics.

We are however concerned about the outlook for the investment climate for distributed energy solutions in the UK. A number of separate, but related policy decisions that have been taken, or are due to be taken, stand to significantly worsen the attractiveness of investments in distributed generation. This includes changes brought (or proposed) to: FiTs, network charging, residual charging, spills payments, and the CCL. All this reduces incentives for investment in flexibility solutions. Flexibility (behind the meter or grid-connected) is important to the integration of variable renewable electricity and therefore a key enabler of decarbonisation.

It is widely accepted that natural gas will play a transition role. Gas plays a key role in backing up intermittent power generation and will continue to be a major source of domestic heating for at least the next 20 years. While supplying natural gas to heat homes and businesses and provide flexible back-up power, we will continue to explore the opportunities to deploy low carbon heating solutions, including high-efficiency gas technology, heat pumps and biogas.

In the longer term, a more radical transformation will indeed be required to meet the UK's 2050 commitment to reduce emissions by at least 80 per cent compared to 1990 levels. We think some technologies will play an important role in the future energy system, including the further deployment of smart grids and the development of biogas.

While most CHPs currently run on natural gas, biogas CHP can combine the efficiency benefits of CHP with a carbon neutral fuel source. Biogas CHP should be of particular interest to food and drink manufacturers and agribusinesses with access to organic food waste as a potential input.

Centrica has an interest in biogas through our Barrow Green Gas Joint Venture. Our Joint Venture is the UK's largest shipper and supplier of renewable gas. To promote the take-up

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of biogas in the UK, we think the Government should consider establishing a 'green gas' obligation on retail gas suppliers designed to achieve a gradually increasing target % of green gas in the supply mix (e.g. up to 10%, by 2030). The newly revised Renewable Energy Directive (REDII) extends Guarantees of Origin to renewable gas, which should facilitate greater cross-border trade in renewable gases. We hope the UK will participate in the scheme after Brexit.

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?

ANSWER:

We believe that carbon sinks (or negative emissions technologies) will be necessary to fully decarbonise the UK energy system.

The recent IPCC report clearly establishes the need for **Carbon Capture and Storage** to develop on a large-scale if global temperature increases are to stay below 1.5 degrees, in line with the Paris Climate Agreement. In three out of the four pathways described in the IPCC report, emissions are removed from the atmosphere thanks to CCS (from 348 GtCO2 to 1,218 GtCO2) to keep temperatures increases below 1.5 degrees.

CCS may not be absolutely necessary in the power sector (which could resort to other decarbonisation solutions, such as biogas or hydrogen) but will be essential to offset industrial emissions in highly energy-intensive sectors. It is deemed to play a major role in the decarbonisation of cement, steel and plastics production.

We are encouraged by the Government's leading role in this area (as demonstrated at the Edinburgh summit in November) and by the expected development of an action plan to enable the development of the UK's first CCUS project, which could be up-and-running by the mid-2020s.

The IPPC also sees a need to grow crops for **bioenergy** production in every scenario. It will be important to ensure that bioenergy produced meets strict sustainability criteria and does not lead to indirect land-use change, as it would reduce land available for food production and for growing forests acting as natural carbon sinks.

Promoting some fuels or technologies may also expose us to trade-offs that require careful consideration. The CCC should be mindful of other emissions (NOx, SOx, PM) that negatively impact air quality. Promoting biomass (for example to deliver a negative emissions route) will have other consequences for air quality – with a direct impact on health and associated social security costs.

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?

ANSWER:

Successive carbon budgets have proved efficient in driving investments in low-carbon technologies. We believe carbon budgets will require further tightening to trigger investments. A tighter long-term target could therefore be sensibly matched with tighter carbon budgets in the future, but care should be taken not to undermine the stability of the system to date through changes to budget already set in legislation.

Near-term market mechanisms such as CfDs have delivered very significant cost reductions in technologies such as offshore wind. The CCC should advise Government to consider what policy levers it needs to use to deliver/over-deliver on existing carbon budgets in a way that supports innovation and cost reduction.

We would advise the CCC not to focus disproportionately on scenarios that would only materialise with the emergence of breakthrough technologies. We are not encouraging the CCC to be overly pessimistic about the potential of new technologies, but would be concerned if we were postponing ambitious climate action to 2030-2050 on the basis of uncertain technologies that may become available on a large scale around that time.

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?

ANSWER:

Behaviour change can be achieved through exhortation and encouragement, but this is unlikely to be anything like sufficient to achieve the necessary carbon reductions. Government will have to use financial levers (eg subsidies and taxes) and mandates (eg products policy) to achieve carbon goals. Mandatory removal of products from the market can be highly effective (eg removal of non-condensing boilers in 2005). But this approach is suitable only where a similar alternative product exists at a broadly comparable cost. Elsewhere subsidies and/or taxes will need to be used to drive consumers to make significantly different choices.

In some areas (for example in the heating sector), new decarbonisation targets should not be set where there is no cost-effective technological alternative for customers, and where HMG does not propose to bridge the financial gap through incentives or subsidies.

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?

ANSWER:

If the CCC were to recommend a different long-term target to the one on the face of the existing Climate Change Act then it should a) set future carbon budgets (6th and onwards) in line with the cost-effective path to the new target (which we would expect to be broadly

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linear with the current trajectory) and b) provide advice to government on the extent to which the UK should seek to over-achieve on the 4th and 5th Carbon Budgets.

The Government could also consider some supporting policy actions, including:
- Introduce zero carbon homes;
- Tighten private sector rental regulations;
- Reverse the decision made at the November budget to abandon the Energy Technologies List (ETL), as we believe enhanced capital allowances are key to encouraging investment in high CAPEX low carbon assets;
- Sustain the deployment rates of solar installations by maintaining the current FiT export tariff (this is particularly important for the retrofit market, where some financial support remains critical).

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?

ANSWER:

Carbon budgets have identified a cost optimum pathway to 2050 based on existing targets. Should the UK move towards a more stringent target, the CCC should provide clarity on the incremental costs incurred compared to the current trajectory. The CCC should also evaluate costs with or without some form of carbon offset regime. This evaluation should also take into consideration any “stranding costs” – i.e. investments made in assets compatible with old carbon budgets, but whose lives are curtailed under tighter targets.

On the issue of technological achievability, the CCC should remain cautious about any likely technological breakthrough able to radically change emissions projections in the mid- to long-term.

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?

ANSWER: No response

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?

ANSWER:

Devolved governments have previously consulted on targets that are tighter than for the UK as a whole. In the case of Wales for example, Wales has higher levels of emissions

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from industry and power generation than other parts of the UK and also the housing stock is less energy efficient. 60% of emissions in Wales come from sectors covered by the EU ETS, versus 36% for the UK as a whole. We note this makes volatility of EUA prices a much more important challenge for Wales.

It is therefore widely anticipated that Wales will need to decarbonise at a faster rate than other parts of the UK in the decarbonisation of domestic heat (and possibly transport) to offset a slower reduction from industry. By adopting a 2050 target of 'at least 80%' Wales is making a proportionally greater contribution to the Paris Agreement than the UK as a whole. Local circumstances could indeed justify more ambitious targets to catch up with the rest of the UK.

However, if such targets lead to over-delivery in one part of the UK and under-delivery elsewhere they are unlikely to be the most economically efficient way of delivering on the overall objective.

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?

ANSWER:

We would advise the CCC to review the European Commission long-term GHG gas reduction strategy issued on 28th November. The Communication analyses eight policy options for the EU's future emissions reduction effort. Two scenarios chart a path toward net zero emissions (NZE) by 2050; five look at emissions cuts of around 80 percent (the EU's current target); another scenario would result in emissions cuts of up to 90 percent. The Commission's pathways to NZE by 2050 would be of relevance to the CCC's own analysis for the UK. The first NZE path looks at boosting the role of bioenergy and carbon capture and storage, whilst the second examines moving towards a full circular economy to reduce, reuse and recycle materials and products. Reaching net zero will also depend on boosting natural carbon absorption by restoring or planting new forests.

We would also advise the CCC to review a recent report issued by Eurelectric ('Decarbonisation Pathways', November 2018, supported by McKinsey) that reveals that the European power sector can be fully decarbonised by 2045 in a cost-effective way. The report describes the necessary market conditions to reach that objective and the enablers from policy and society.

In our view the CCC has underestimated the role of distributed energy solutions in reducing emissions in the industrial and commercial sector. As previously mentioned under question 6, we have released a report which shows that distributed solutions (such as DSR, CHP and other flexibility solutions) could meet more than half of the 20% carbon reduction target by 2030 for the healthcare, industry and hospitality sectors, as set out by the Clean Growth Strategy. Their carbon reduction impact could continue after 2030 if green feedstocks were used, for example to replace natural gas in CHP.