Building a zero-carbon economy – Call for Evidence

UKOOG's 12 key points:

- **Natural gas is critical for the economy wide energy demand of the UK regardless of the decarbonisation scenario.**
- **The UK has a large and increasing natural gas import dependency. Under scenarios compliant with the Climate Change Act, this is as large as 1,450bcm by 2050.**
- **The need for domestic oil production will remain strong as the UK's oil import dependency increases.**
- **Oil will be required given the demand for air and road transport – as well as in the manufacturing of chemicals and products, such as those used in the production and operation of low carbon energy solutions.**
- **Since 1990, the UK has reduced its annual emissions by more than 40% - making it the fasting decarbonising G7 nation.**
- **Without increases in domestic production, the UK will be locked into reliance on higher carbon gas sources such as LNG and long-distance pipeline. UK shale gas is therefore essential to prevent an offshoring of our environmental responsibility.**
- **CCUS is critical for the UK to achieve decarbonisation targets at least cost.**
- **The carbon accounting system actively incentivises carbon intensive imports over lower carbon domestic production. Such perverse incentives must be addressed.**
- **Tightened national targets and GWP (global warming potential) modifications should only be applied if replicated internationally. A tightened UK carbon budget could simply incentivise the offshoring of industry in the absence of adequate safeguards.**
- **UKOOG believe that a carbon border adjustment for energy should be applied if the Climate Change Act is modified for a 1.5°C budget.**
- **The UK onshore oil and gas industry is engaging with a variety of stakeholders to prove and improve its environmental performance. The 'UK Model' is being developed which focuses on gas management techniques, innovative water management solutions and traffic reduction proposals.**

- **The CCC concluded in their 2016 report, following the Paris Agreement, that the 'stretching targets' of 80% emissions reduction by 2050 are already at the higher end of international ambition.**

Background

On 15 October 2018 the governments of the UK, Scotland and Wales asked the Committee on Climate Change (CCC) to provide advice on the UK and Devolved Administrations' long-term targets for greenhouse gas emissions and the UK's transition to a net zero-carbon economy. Specifically: when the UK should reach net zero emissions of carbon dioxide and/or greenhouse gases as a contribution to global ambition under the Paris Agreement; if that target should be set now; the implications for emissions in 2050; how such reductions can be achieved; and the costs and benefits involved in comparison to existing targets.

The advice has been requested by the end of March 2019.

The UK's long-term emissions target is currently for at least an 80% reduction in greenhouse gas emissions from 1990 to 2050. It covers all sectors, including international aviation and shipping and is measured on a 'territorial' basis (i.e. based on emissions arising in the UK). On a comparable basis, emissions in 2017 were estimated to be 38% below 1990 levels.

The current target was set in 2008 based on advice from the Committee. That advice considered that to avoid the worst impacts of climate change, the central expectation of global temperature rise should be limited "to, or close to, 2°C", while the probability of crossing "the extreme danger threshold of 4°C" should be reduced to an extremely low level. That meant global emissions would roughly have to halve by 2050. The 2008 advice made the assumption that the UK should not plan to have a higher level of per capita emissions in 2050 than the global average.

The long-term target guides the setting of carbon budgets (sequential five-year caps on emissions that currently extend to 2032 and require a reduction in emissions of 57% from 1990 to 2030). Both the 2050 target and the carbon budgets guide the setting of policies to cut emissions across the economy (for example as set out most recently in the 2017 Clean Growth Strategy).

Any change to the long-term targets would therefore be expected to have significant implications, not just in the long-term but on current policies to drive the transition.

The CCC will advise based on a thorough consideration of the relevant evidence. We expect that to cover:

- The latest climate science, including as contained in the IPCC Special Report on 1.5°C.
- The terms of the Paris Agreement.

- Global pathways (including those reported by the IPCC) consistent with limiting global average temperature rise in line with the goals of the Paris Agreement.
- International circumstances, including existing plans and commitments to cut emissions in other countries, actions to deliver on those plans and opportunities for going further.
- An updated assessment of the current and potential options for deep emissions reductions in the UK and emissions removals from the atmosphere, including options for going beyond the current 80% target towards net zero.
- An appraisal of the costs, risks and opportunities from setting a tighter long-term target.
- The actions needed in the near term that would be consistent with achieving the long-term targets.

This Call for Evidence will contribute to that advice.

Responding to the Call for Evidence

We encourage responses that are brief and to the point (i.e. a maximum of 400 words per question, plus links to supporting evidence, answering only those questions where you have particular expertise), and may follow up for more detail where appropriate.

You do not need to answer all the questions, please answer only those questions where you have specific expertise and evidence to share. It would be useful if you could use the question and response form below and then e-mail your response to: communications@theccc.gsi.gov.uk using the subject line: 'Zero carbon economy – Call for evidence'. Alternatively, you can complete the question and answer form on the CCC website, available here.

If you would prefer to post your response, please send it to:

The Committee on Climate Change – Call for Evidence
7 Holbein Place
London
SW1W 8NR

The deadline for responses is 12 noon on Friday 7 December 2018.

Confidentiality and data protection

Responses will be published on our website after the response deadline, along with a list of names or organisations that responded to the Call for Evidence.

If you want information that you provide to be treated as confidential (and not automatically published) please say so clearly in writing when you send your response to the consultation. It would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for

disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded by us as a confidentiality request.

All information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the access to information legislation (primarily the Freedom of Information Act 2000, the Data Protection Act 1998 and the Environmental Information Regulations 2004).

Question and response form

When responding, please provide answers that are as specific and evidence-based as possible, providing data and references to the extent possible. Please limit your response to a maximum of 400 words per question.

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: UKOOG have no comment on this question.

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?

ANSWER: UKOOG believe that the Global Warming Potential of methane in particular should be maintained at its current level. In the CCC's report on the compatibility of onshore petroleum with UK carbon budgets, it states '*we compare methane and CO_2 emissions using the 100-year Global Warming Potential of 25. This metric is used as standard in international and UK emissions accounting, including carbon budgets and the 2050 target*'[i]. UKOOG agree with this assessment.

If there was to be a modification of the GWP of gases, UKOOG are unclear what the implications would be on historical emissions. Similarly, if other nations globally were not to implement such a change, it would in reality create a vacuum for methane intensive industries in the UK, such as animal agriculture. UKOOG do not believe that the offshoring of industry to other countries with weaker environmental regulations and inferior climate policy is an appropriate decarbonisation strategy for the UK.

In the UK, methane emissions have been reduced by almost 60% from 1990 to 2016[ii]. The greatest reductions have been from energy supply (-85%) and waste (-71%)[ii]. UK fugitive

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methane emissions from fuel production decreased in the last decade of the 20th century, even as offshore oil and gas production increased to its 2000 peak. Today, the UK onshore oil and gas industry applies the best available techniques (BAT) for gas management, for example the utilisation of zero bleed pneumatic controllers and a ban on open flowback lagoons on production sites (the latter of which is common at US onshore oil and gas sites), as well as a ban on direct cold-venting during the short flowback period of UK shale gas sites[iii].

Under the calculations carried out by the CCC, UK shale gas production would have a production footprint of 28 g CO_2/kWh from both methane and CO_2 emissions[i]. When compared to the footprint of LNG from the Mackay and Stone analysis, which is 57 g CO_2/kWh, UK shale gas would offer a 50% pre-combustion saving[iv]. If, however, the UK methane GWP was increased from 25 to 34, the carbon footprint of the relatively small amount of methane emitted would increase by 38%, despite no increase in gaseous volume. Unless such GWP comparators were applied to imported fuels, the incentive to import goods is enhanced even further than under present conditions.

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: UKOOG are concerned about the impact of the carbon accounting system on our industry and on the country in general. For example, even though UK production emissions declined by 33% from 1997 to 2015, carbon imports of the UK increased by 31%[v]. It could be argued that UK decarbonisation efforts are at least in part being masked through increases in imported goods.

Under the three tests set by the CCC in the 2016 report, the first test requires methane emissions to be limited. The industry is applying the best available techniques to do so. The second test requires production to displace imports. UKOOG and its operator members have been very clear that we do not require an increase in oil and gas demand for there to be a continued role for the sector[i]. Instead we propose a solution to resolve our large and growing energy import dependency, which 72% of the UK population are rightly concerned about. In the National Grid '2°C' scenario, where the UK meets all carbon targets to 2050 – the UK would still be reliant on natural gas imports of up to 1,450 bcm[vi].

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Instead of importing gas from increasingly further afield sources, UKOOG believe the majority of this demand should be met by domestic sources. However, under the current accounting system, the production emissions associated with imported gas are accounted for in the country of production, not consumption. The ultimate effect is that by reshoring energy production in a country with a 50% natural gas import dependency, the production emissions are 'reshored', which in effect pushes the UK emissions up:

- If such a system was to be reversed and the UK decided to meet its Climate Change Act compatible oil and gas demand with imports in entirety, the UK would reduce its annual emissions – so for example if the UK was to shut down its offshore oil and gas production and replace it all with long distance pipeline and LNG, around 15 Mt CO2e per year would be saved[vii].
- Similarly, if the UK was to import all of its food at the expense of our domestic agriculture industry – the UK would reduce its annual emissions by almost 50 Mt CO2e per year despite such imports requiring to be transported across oceans and continents, effectively increasing their carbon footprint[viii].

UKOOG find the carbon accounting system to be perverse as it effectively incentivises offshoring our environmental responsibility to the four corners of the earth, and gives key stakeholders such as the CCC no influence over production methods.

As an industry we are already taking action to minimise the production emissions from our future operations, which is beneficial to the industry as well as government. **Our view is that if the UK can meet its strict carbon targets (be that under a 2°C scenario or a 1.5°C scenario) with carbon intensive imported natural gas, it can do so with lower carbon domestic natural gas.** Similarly, UKOOG firmly believe that LNG would be better served going to nations with high reliance on coal, such as India. The direct displacement of coal with LNG in developing nations offers far reaching decarbonisation and air quality benefits, compared to a negative environmental impact by exporting it to the UK.

In our view, a carbon border adjustment should be applied for energy in the UK, as was recommended in Dieter Helm's energy review[ix].

In the CCC biomass review, a conclusion was that there should be 'strong sustainability governance' for biomass imports to avoid importing a fuel which does not meet the UK's high standards[x]. Why should the same not be applied for other energy sources? UKOOG strongly feel that the CCC need to encourage greater scrutiny of upstream emissions from LNG and long-distance pipeline gas, especially as these sources are likely to form a greater share of the UK gas mix in the absence of shale gas production.

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: UKOOG firmly believe that the UK can assist in supporting emissions cuts in other nations by developing cost effective mechanisms to remove coal from the energy system.

Coal represents 40% of the global power mix, a share which has not changed since 1990, and supplies around 1/3 of global energy demand[xi]. Coal has a disproportionate emissions impact, given that it emits double the CO2 emissions of gas per kwh – and globally is responsible for 46% of CO2 emissions[xi]. The USA has reduced its annual emissions by around 760 million tonnes CO_2e/year since 2005 partly as a result of the displacement of coal with shale gas[xii]. Coal mining is also a significant source of methane emissions, which is frequently neglected in literature comparisons. The US EPA estimate that coal mines internationally will emit around 670 Million tonnes CO_2e (as methane) by 2020, more than 50% of which will come from China[xiii]. This emission source is more than that from the entire international shipping industry. China could achieve annual emissions reductions greater than 1 billion tonnes CO2e per year simply by displacing coal with natural gas in the power sector.

The UK is a key leader in the 'Powering Past Coal' alliance, which seeks to achieve the international goal of coal displacement. UKOOG support this collaborative effort, however it needs to widen its scope to include the larger coal consuming countries, such as China, India and the USA.

In the UK, coal consumption has declined by over 90% since 1990, an excellent achievement[xiv]. As a result, energy sector emissions have declined by 57%, chiefly by switching in natural gas and renewables[xv]. A key driver for this has been the UK carbon price, which has been kept at a higher level (total carbon price) than the EU ETS given its relatively poor performance over the last decade. UKOOG would recommend the application of a carbon price to other nations as a key mechanism to incentivise the switch from coal to natural gas and renewables.

A total switch from coal to 100% renewables is simply not feasible under current technologies in industrial nations – as the intermittency associated with wind and solar power restrict their reliability. This is best demonstrated in the UK, where natural gas can provide as low as 25% of UK power, but as high as 63% depending on wind and solar output[xvi]. Under the CCC's high renewable scenario for 2030, which sees UK power sector carbon intensity of <100 gCO2/kWh – natural gas is still the one of the single largest power sources[xvii]. UKOOG firmly believe that the continued use of natural gas in power sectors globally will allow for increased penetration of intermittent renewable sources, and therefore decrease emissions from the sector. Such views have been mirrored in academic literature[xviii].

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Coal and traditional fuels are also a significant source of air pollutants. Coal and bioenergy (such as dung and wood used in developing nations), emit around 60% of global particulate emissions, 45% of global sulphur dioxide emissions and around 18% of nitrogen oxides[xix]. By contrast, natural gas emits less than 1% of global particulate matter, less than 1% of global sulphur dioxide and less than 10% of nitrogen oxides[xix].

It is UKOOG's view that the ban on coal should come into effect in the UK before the recommended year of 2025, and that a global ban on coal should come into force within the following 10-20 years.

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: UKOOG have no comment on this question.

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: The UK onshore oil and gas industry is an extensively regulated sector of the UK economy, and according to data from the Environment Agency, our industry is the best performing of any sector regulated by the EA in England[xx]. Building on such good statistics, we hope to not only continue to prove our environmental performance but improve it.

Such a level of regulatory scrutiny is not equally applied to other sectors of the UK economy. Defining an industry as 'hard to decarbonise' can give some sectors a relatively easier pathway, requiring less far-reaching intervention. Our view is that there should be a level playing field for all industries in the UK.

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UKOOG do support proposals which clearly outline how 'hard to decarbonise' sectors can remain in the UK instead of being offshored to foreign countries, which typically have more carbon intensive energy systems. Manufacturing in the UK has declined from 17% of GVA in 1997 to only 10% in 2015. This is a trend which can be stopped, or perhaps reversed, in the transition to a low carbon economy. Energy demand from heavy industry is typically flat throughout the seasons, and doesn't see the extensive variation in demand seen in the domestic heating system for example. Therefore, UKOOG fully support the model for industrial clusters whereby methane reforming with CCUS can produce the hydrogen needed for heavy industry. The question is therefore where the methane should be sourced from, and whether the UK desires to be reliant on importing greater volumes of natural gas.

UKOOG also note that under a shift to a hydrogen economy, the UK could fuel heavy industry by importing hydrogen produced from SMR but without CCS under the current accounting system. Such a perverse incentive would have to be addressed.

Finally, UKOOG wish to note the 'close to zero' target. Under CCC analysis, no energy source produces zero life cycle emissions – for example offshore wind can vary between 5-24 gCO2/kwh and solar can be as high as 85 gCO2/kwh[xvii]. This is because of the upstream energy requirements in the mining process, to include heavy metal mining in developing nations – and the subsequent processing required to make them suitable for use in the UK. UKOOG firmly believe that a considered approach to entire life cycle emissions need to be considered for all energy sources – be that wind, solar, biomass or natural gas.

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: UKOOG have no comment on this question.

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?

UKOOG and government are driving the UK onshore oil and gas industry in developing the

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'UK Model' – whereby we develop the most sustainable onshore oil and gas industry in the world. This development was not proposed in light of a proposed tighter emission target but as part of the key voluntary process of improving the environmental performance of our industry as research and development in the sector matures.

This project will involve onsite emissions reductions, such as a shift to natural gas fired or electric engines onsite to fuel the hydraulic fracturing pumps and perhaps even the drilling rigs. Doing so will reduce onsite carbon emissions and other emissions to air by taking advantage of the reduction in the carbon intensity of the UK power grid.

Demonstrating the effectiveness of onsite emissions reductions will also be key in giving the public and policymakers confidence in the effectiveness of our voluntary improvements. This effort will be demonstrated by engaging with academia and our supply chain to apply the next generation of emission monitoring equipment onsite. These technologies can similarly be applied to other UK industries, and or exported to other nations around the world seeking to develop their unconventional hydrocarbon assets.

A final segment of the UK model includes water management. UKOOG are engaging with government and international partners to assess the viability of bespoke water treatment facilities. These technologies can reduce traffic movements at onshore oil and gas sites.

On a national scale, UKOOG firmly believe support for CCUS projects in the UK is critical moving forward. CCS is a proven technology, with 21 projects operating at commercial scale globally today. In Port Arthur, Texas, two steam methane reforming plants have been retrofitted with CCS technology and around 1 million tonnes CO_2e is sequestered per year[xxi]. The Net-power Allam Cycle is now in its testing phase too[xxii]. In Norway, CO_2 has been sequestered offshore for more than 20 years. In total, over 17 million tonnes of CO_2 has been stored offshore, with the Snøhvit facility having stored over 4 million tonnes CO_2 alone[xxiii]. Typically, the carbon has been utilised for enhanced oil recovery in the North Sea, however as CO_2 is used in industries such as foodstuffs there is scope for a widening of the definition of 'utilisation'.

In conclusion, UKOOG's view is that we must as a nation move beyond the research and enter the development stage of pilot projects for CCUS and hydrogen production. Real life projects will enable industry and policymakers to plan for the medium and long term in the transition to a low carbon economy.

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?

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ANSWER: In UKOOG's view the shift in behaviour of consumers required even under the scenarios compliant with the Climate Change Act will require significant intervention. Electricity is the simplest sector to decarbonise as the electrons produced from a combined cycle gas turbine are ultimately the same as that from an offshore wind turbine.

For other sectors, such as heating – a shift to lower carbon solutions will be very challenging. In 2017, 1.6 million domestic heat boilers were purchased by UK consumers, compared to 22,000 heat pumps, equating to 72 times as many[xxiv]. UKOOG notes that the CCC in the hydrogen report recommend the deployment of hybrid heat pumps, whereby heat pumps and gas boilers can be used as required by the heat demand. It has not been made clear how such a proposal would be funded or incentivised. UKOOG is very happy to engage with policymakers to ensure that the least cost options for decarbonisation to 2050 can be realised, which in our view continues to have natural gas as a critical fuel source for the UK.

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: In UKOOG's view, government policy on achieving its current or tightened 2050 targets must not incentivise the demolition of domestic industry. As explained previously, the end result of domestic industrial demise will be an offshoring of our emissions and our environmental responsibility to other nations – and the products will simply be imported (increasing our carbon import volume).

In our view – government policy needs to continue to make the case for domestic oil and natural gas, not only in the transition to a low carbon economy – but at the outcome destination too. There is no realistic scenario which does not include an instrumental role for natural gas in the UK across heat, industry and power. Similarly, oil will be needed in the transition to a low carbon economy for transport and industry in particular.

Under UKOOG modelling for a 1.5-degree budget – the combined carbon budgets for 2020-2050 give total carbon emissions of 7,946 Million tonnes CO2e. Once the 'harder to decarbonise' sectors of aviation and agriculture are removed – that gives a total budget of 5,324 million tonnes CO2e over 30 years. Under National Grid's 2°C scenario, the UK has a natural gas import dependency of 1450 bcm from 2020-2050 and it is around 1,150 bcm for the CCC modelled scenario[i,vi]. Under the modelled 1.5-degree scenario for gas demand, UKOOG do not see the natural gas demand varying widely given the need for natural gas to feed the methane reformers needed to produce hydrogen at least cost in the UK.

Oil and gas represent 75% of final energy consumption in the UK, compared to around 3% for wind and solar power[xiv]. UKOOG note that the CCC and others have regularly affirmed that CCUS is needed for least cost decarbonisation, and that its absence could double the

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decarbonisation costs. Under potential steeper decarbonisation requirements in line with the 1.5°C budget, the need for CCUS for least cost decarbonisation would be even more pronounced. Given the need to minimise the upstream life cycle emissions of the energy provided in order to achieve a true net zero target, a domestic gas source should be utilised instead of a higher carbon footprint imported sources, such as LNG or long distance pipeline.

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: Under the CCC's analysis for low carbon heat options for 2030 – the conclusions were that without a tax on domestic heating in the UK, air source heat pumps could not compete with a typical gas boiler[xxv]. The cost difference was estimated by the CCC to be around £200 per year[xxv]. It needs to be clearly communicated that the CCC believe a tax on domestic heating would be required to incentivise the shift from gas boiler heating to air source heat pump heating. Doing so will be especially difficult in a country which has around 13% of all households in fuel poverty, with up to 27% of households in Scotland defined as being fuel poor[xxvi].

UKOOG are concerned that deeper emissions reductions beyond what is legislated domestically in the UK would bear an undue cost on consumers and businesses. Such costs are likely to be larger if emissions reductions from the 99% of global CO_2 emissions outside of the UK do not also see rapid decline as the UK would therefore have to bear the costs of both decarbonisation and adaption. UKOOG therefore believe that a modified budget beyond the 'stretching targets' outlined in the Climate Change Act should only be applied where there is international action to do the same.

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: UKOOG have no comment on this question.

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?

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ANSWER: UKOOG fully support the shared decarbonisation of each devolved nation within the United Kingdom. However, it is important that the individual characteristics of each nation are taken into account properly, instead of making simplified comparisons. For example, Scotland represents around 10% of UK power consumption – with England representing 82%, over 8 times as much[xxvii]. Assuming that the UK could replicate Scotland's power sector makeup is an unrealistic representation of the scale of the challenge of decarbonisation. Similarly, comparing small nations such as Costa Rica to the UK is equally dubious. To quote an Imperial College London study '*A presentation of scenarios that do not adequately account for system reliability and operability issues carry the danger of misleading decision makers and the public, potentially leading to a misuse of political and financial capital, and delaying the actual transition to a low carbon economy*' [xxviii]. UKOOG agree with this assessment.

The CCC have commented previously that '*the UK should not rely on imported electricity unless it is clear that imports are from low carbon sources and the UK can rely on their continued supply*[xxix]'. At present, there are no safeguards to prevent the UK simply importing more carbon intensive electricity from continental Europe – in reality there are incentives to do so, as imported power does not have to pay the UK transmission costs and is exempt from the higher UK carbon price[xxx]. The issue is likely to continue as further proposed interconnectors from Germany and the Netherlands could export high carbon coal power to the UK[xxxi]. According to the most recent government statistics, the UK could be reliant on imported sources for 24% of its annual electricity consumption by 2025[xxxii]. We do not see such a proposal as a sensible decarbonisation strategy or beneficial to UK energy security. UKOOG believe there should be regulations put in place to prevent the importing of fossil generated power from continental Europe being accounted as 'zero emissions', as the current system disincentivises thermal and renewable sources of UK power generation.

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: UKOOG would be interested to know what the CCC believe has changed in the past 2 years since the publishing of the report 'UK climate action following the Paris Agreement'[xxxiii]. In this report the CCC concluded that the 'stretching targets' to 2050 should not be modified yet as UK targets were already at the higher end of international ambition and that the UK government should 'vigorously pursue the measures required to deliver on existing UK commitments' [xxxiii]. UKOOG agree. The fifth carbon budget and beyond under the current pathway will be very challenging to achieve. There needs to be an integrated and clear understanding of the requirements of government, consumers and

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businesses if such targets are to be achieved at least cost and while maintaining British industrial competitiveness.

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[i] https://www.theccc.org.uk/wp-content/uploads/2016/07/CCC-Compatibility-of-onshore-petroleum-with-meeting-UK-carbon-budgets.pdf

[ii] http://naei.beis.gov.uk/overview/pollutants?pollutant_id=3

[iii] https://consult.environment-agency.gov.uk/onshore-oil-and-gas/onshore-oil-and-gas-regulation-information-page/user_uploads/2017-ea-environmental-controls-factsheet-2.pdf

[iv] https://www.gov.uk/government/publications/potential-greenhouse-gas-emissions-associated-with-shale-gas-production-and-use

[v]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/704607/Consumption_emissions_May18.pdf

[vi] http://fes.nationalgrid.com/fes-document/

[vii] https://cld.bz/QWQ7dwt/6/

[viii] https://www.theccc.org.uk/publication/land-use-reducing-emissions-and-preparing-for-climate-change/

[ix]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/654902/Cost_of_Energy_Review.pdf

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