



The Committee on Climate Change – Call for Evidence
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1 June 2015

The Fifth Carbon Budget – call for evidence

EDF Energy is one of the UK's largest energy companies with activities throughout the energy chain. Our interests include nuclear, coal and gas-fired electricity generation, renewables, and energy supply to end users. We have over five million electricity and gas customer accounts in the UK, including residential and business users.

EDF Energy supports the Government's continuing engagement to drive international action on climate change within the EU and globally and welcomes the Government's commitment to achieving a positive outcome from the COP 21 conference in Paris later this year.

We also support the use of carbon budgets to map out the path to meeting the UK's 2050 objective of an 80% reduction in greenhouse gas emissions on 1990 levels; we believe that the system of carbon budgets helps to provide clear signals for investment and business planning. We believe that the targets set by the Fifth Carbon Budget must ensure that the UK stays on the most cost-effective course to meet the 2050 objective. This means that the electricity sector must be largely decarbonised by 2030, enabling further emissions reductions to be achieved through electrification of heat and transport. Customers must be fully engaged in this transformation, reinforcing the need for the industry, Government and Ofgem to use the outcome of the current Competition and Markets Authority (CMA) investigation to re-build trust in our industry.

We understand why the Government may not wish to set a g/kWh decarbonisation target range for electricity generation as provided for in the Energy Act 2013 and we recognise the potential distortions that may arise from such a target. Nevertheless, we believe that it is essential that there are five clear areas of action towards the decarbonisation of the electricity sector.

- The momentum of the Electricity Market Reform (EMR) package must be maintained, building investor confidence through stability in the operation of the components of EMR: the Carbon Price Floor, Contracts for Difference (CfD), the Capacity Market and the Emissions Performance Standard. EMR provides the right framework to drive the transition to a secure and affordable low carbon generation mix.
- It is critical to ensure that there is a focus on ensuring that there is the necessary investment in low carbon generation. Government should provide developers with assurance about the future pace of decarbonisation of generation through clarity on the Levy Control Framework after 2020/21. Recognising the downward pressure on electricity wholesale prices created by decarbonisation itself, it may also be necessary

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to consider whether the current formulation of the Levy Control Framework will remain appropriate in future.

- New nuclear has an essential role to play in the decarbonisation of the electricity sector, offering a low cost source of secure and reliable low carbon electricity. We are working with the Government and others to overcome the remaining hurdles to enable a Final Investment Decision on Hinkley Point C. It will be important to build on the work done on Hinkley Point C to ensure that there is the right legal framework and the right industrial structure in place to facilitate a series of further new nuclear developments. Life extensions of existing nuclear are also important and they should continue to be properly remunerated by the market framework for the provision of reliable capacity and low carbon energy.
- Decarbonisation of electricity is bringing with it significant changes in electricity generation and demand, including the increasing penetration of intermittent generation and the growth of distributed generation. It is important to take a total system view that considers customer demand, networks and generation to ensure the effective management of the impacts and appropriate allocation of costs of these changes on system operation. In the absence of major breakthroughs in electricity storage or demand side management, there will be a limit on the contribution that intermittent renewable generation can make.
- Further emphasis is required on research and development and on the effective deployment of new technologies to drive and to support decarbonisation, including carbon capture and storage and electricity storage technologies.

The next major challenge is decarbonisation of heat, particularly in the existing housing stock. The scale of this challenge should not be underestimated, not only on a technical level but also overcoming barriers to change, recognising that the decarbonisation target can not be met if we continue to burn significant quantities of gas for domestic heating. It will require action both to improve thermal efficiency and to electrify heating, including the installation of heat pumps where appropriate.

Our detailed responses to the Call for Evidence are set out in the attachment to this letter. Should you wish to discuss any of the issues raised in our response or have any queries, please contact Guy Buckenham on 07875 112585, or myself.

I confirm that this letter and its attachment may be published on CCC's website.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Angela Pearce'.

Angela Pearce
Corporate Policy and Regulation Director

The Fifth Carbon Budget - Call for Evidence

www.theccc.org.uk/call-for-evidence

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.

Questions for consideration:

A. Climate Science and International Circumstances

Climate science and international circumstances are important criteria in setting carbon budgets.

- The science indicates the impacts associated with different levels of climate change and the limit on emissions globally if these risks are to be contained.
- International circumstances inform the prospects of future action to reduce emissions globally, potential requirements of the UK to contribute to those actions, and prospects for low-carbon technology development and carbon pricing.
- The EU places obligations on Member States to reduce emissions to contribute to reductions in the bloc as a whole. These imply a minimum level of effort for the UK's carbon budgets.

The Committee intends to draw primarily on the work of the IPCC, as published in the Fifth Assessment Report, in assessing the implications of climate science for the budget advice

The Committee's advice is based on a climate objective to limit central estimates of temperature rise to as close to 2°C as possible, with a very low chance of exceeding 4°C by 2100 (henceforth referred to as "the climate objective"). This is broadly similar to the UNFCCC climate objective, and that of the EU.

In order to achieve this objective, global emissions would have to peak around 2020, before decreasing to roughly half of recent levels by 2050 and falling further thereafter.

The UNFCCC is working toward a global deal consistent with such reductions. Individual parties are submitting pledges for effort beyond 2020, with the details of the agreement to be discussed in Paris late in 2015.

The EU has agreed a package that requires a reduction in emissions of at least 40% on 1990 levels by 2030, on the way to an 80-95% reduction by 2050. The UK Government supported this package, while arguing for an increase to 50% in the context of a global deal.

The US and China have jointly made pledges for the period beyond 2020. The US has pledged a reduction of 26-28% by 2025 versus 2005, requiring a doubling of the rate of carbon reduction compared to 2005-2020 and on a trajectory to economy-wide cuts of the order of 80% by 2050. China has pledged to peak CO₂ emissions around 2030, and to make best efforts to do so earlier.

Question 1 The IPCC's Fifth Assessment Report will form the basis 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:

EDF Energy agrees that the IPCC's fifth assessment report should be used as the basis of the assessment of climate risks and global emissions pathways consistent with climate objectives

However, the Committee on Climate Change (CCC) must consider as many sources as possible to ensure that it has the most informed view possible when setting Carbon Budgets, as well as cross-checking with the IPCC view. These sources should be made publicly available.

The International Energy Agency (IEA), of which the UK is a member of, should be able to provide evidence, particularly through its World Energy Outlook (WEO), to support and supplement the information that is evident in the IPCC fifth assessment report. Indeed, the IEA is planning to release in June a special WEO-2015 report, to support policy makers and other stakeholders in the run-up to COP 21.

The CCC should also consider any other credible authorities when it comes to energy demand projections.

The Meteorological Office, in partnership with other institutions, has carried out a number of studies on the impacts of climate change on, for example, water resources in the UK. These provide very useful national insights into the impacts of climate change at a UK level and are a valuable resource for the CCC.

The CCC should also consider work that has been done at UK level, through the Department for Environment, Food & Rural Affairs' (DEFRA) Climate Change Adaption work, and ensure the work that it is being carried out through this work is consistent with the work and assumptions included within this report.

The Energy Technologies Institute Smart Systems and Heat report provides a good insight into the future of heating in the UK.

Question 2 To what extent are the UN talks in Paris likely to have implications for the Committee's advice beyond the pledges and positions announced in

advance of the talks?

ANSWER:

EDF Energy supports the CCC in setting ambitious yet realistic targets to reduce greenhouse gases emissions from the UK. These targets should be set to ensure the most cost-effective path to the UK's statutory 2050 emissions reduction target. These targets should take into account the EU announced targets, but not be limited by these.

It is vitally important that there is a push towards a concerted global effort to reducing emissions. Therefore, EDF Energy actively supports the Conference Of Parties (COP) process and urges the UK to work with other nations to ensure that there is a global agreement, which is consistent with the pathway to the UK's current 2050 target.

EDF Energy recognises the continuous nature of international climate change negotiations, with the agreement in Paris likely to be the beginning of a process, which will continue to be reviewed and increasingly ambitious, to ensure global emission reductions will be consistent with keeping warming below 2°C. We advocate and believe that the discussions in Paris will result in a global deal which will put the world on the path towards what is required.

Therefore, we believe that the CCC should be confident in setting targets which are consistent with the 2050 target.

The CCC should always take into account that, because of different possible pathways to meeting the required emissions reduction, there will be concerns over carbon leakage. However, we do not see this being significant enough to justify any deviations from moving towards the emissions reductions required by the 2050 target. In practice, carbon leakage is an issue for certain specific sectors only, under specific circumstances, and there are targeted measures available that are the most appropriate way to address this risk.

Question 3 *Based on the available evidence, does the EU 2030 package reflect the best path to its stated 2050 ambition? How might this package change, specifically its targeted emissions reduction, either before the end of Paris or after Paris?*

ANSWER:

EDF Energy supports the European Union's (EU) 2030 package and believes that it provides a flexible framework for member states to find the most cost-effective pathway to meeting their emission reduction targets. Governance should ensure that a balance is maintained between competitiveness, security of supply and sustainability and that costs for European customers remain affordable.

A strong carbon price, through the EU Emission Trading System (ETS), is crucial to drive the required emissions reduction. This will provide the appropriate signals for the required move to a decarbonised energy mix, ensuring both coal to gas switching and a switch to investment in low carbon technologies. A carbon price will ensure that the ETS traded sector can find a diverse, secure supply of energy through a range of low carbon technologies.

It is crucial that the ETS is appropriately reformed so that the carbon price is strong and predictable enough to drive low carbon investment. This has begun with the introduction of the Market Stability Reserve, but deeper reform may also be required to ensure a representative carbon price.

As the ETS is currently not providing the appropriate carbon price signal, the UK has therefore introduced the Carbon Price Floor (CPF) and we believe that this will continue to have an important role up to the fifth carbon budget period. Member States within the EU each have their own unique set of circumstances, which determine both their current carbon emissions and the pathways for carbon reduction. Member States will vary in the pace of change and mix of measures for decarbonisation. For a number of reasons, the UK is well placed to decarbonise at a relatively fast pace within the EU. It is important that the UK takes full advantage of the cost effective opportunities to decarbonise as they arise, rather than attempting to match UK decarbonisation to some notional EU average, which could result in a more expensive total cost for decarbonisation.

Question 4 *How does the UK's legislated 2050 target affect its ability to support international efforts to reduce emissions, including its position in negotiations? Does the level of UK carbon budgets have any additional impact (over-and-above the 2050 target) for the UK in international discussions?*

ANSWER:

The UK's Climate Change Act 2008 states that it is required that there will be an emissions reduction by 80% compared to 1990 level of greenhouse gases (as defined within the Kyoto agreement). This target has been set with a view to limiting the warming of the earth to less than 2°C.

The Climate Change Act 2008 contains within it the ability to amend the emissions

reduction percentage if there have been significant developments in (i) scientific knowledge about climate change, or (ii) European or international law or policy. The CCC must consider this as part of its role.

This statutory target shows that the UK is firmly committed to the need to reduce emissions and tackle the issue of climate change and that this has been done prior to any agreed global deal. We strongly believe that the UK should continue with its current path and should be a strong influence towards a global deal at the negotiations in Paris and beyond.

B. The cost-effective path to the 2050 target

The carbon budgets need to set a path that is achievable from today without being over-optimistic about what is achievable in later periods to prepare for the 2050 target.

The Committee has previously set out scenarios for 2030 that balance effort before 2030 with potential opportunities from 2030 to 2050. The scenarios aim to include ways of reducing emissions that are likely to be relatively low cost and actions that will develop options that may need to be deployed at scale by 2050.

These scenarios, reviewed in detail in the Committee's report *The Fourth Carbon Budget Review – the cost-effective path to the 2050 target*, include substantial investment in low-carbon power generation, roll-out of low-carbon heat (heat pumps and district heating), development of the markets for ultra-low emissions vehicles and a combination of energy efficiency measures and fuel switching in industrial sectors.

The scenarios also reflect detailed assessments of what is practically deliverable, and the Committee monitors progress towards them as part of its statutory duties. The *2014 Progress Report to Parliament* indicated that current policy would not be enough to meet the fourth carbon budget, but that the 'policy gap' could be closed at affordable cost.

The set of policy options required to close the gap include:

- Strengthening the EU Emissions Trading System.
- Setting a clear objective for Electricity Market Reform (EMR) beyond 2020.
- Focusing on low-cost residential energy efficiency.
- Simplifying policies targeting commercial energy efficiency.
- Tackling financial and non-financial barriers to low-carbon heat.

- Pushing for strong EU targets for new vehicle efficiency in 2030.

The Government has subsequently published various documents, including its formal response, as required under the Climate Change Act, and the National Infrastructure Plan. The Plan includes investments of around £100 billion in low-carbon power generation in the 2020s, in line with the scenarios from the EMR Delivery Plan that reach 100 gCO₂/kWh by 2030. It also has significant investments in offshore oil and gas and in the road network. This includes £15 billion of new spending on roads and around £50 billion on offshore oil and gas.

Question 5 *In the area(s) of your expertise, what are the opportunities and challenges in reducing emissions to 2032, and at what cost? What may be required by 2032 to prepare for the 2050 target, recognising that this may require that emissions in some areas are reduced close to zero?*

ANSWER:

We expect that in order to be on track to meeting the required targets in 2050, that the electricity industry would be largely decarbonised by 2032. However, the fifth carbon budget represents a signpost on the pathway to meeting the Climate Change Act's 2050 target rather than merely being an absolute target in its own right. We recognise, for example, why the Government may not choose to set a specific g/kWh decarbonisation target for electricity generation; nevertheless, there are some clear areas for action.

Electricity Market Reform (EMR) provides the right framework to drive the transition to a secure and affordable low carbon generation mix; the momentum of the EMR package must be maintained, building investor confidence through stability in the operation of EMR

To ensure the necessary investment in low carbon generation, Government should provide developers with assurance about the future pace of decarbonisation of generation through clarity on the Levy Control Framework (LCF) after 2020/21. Recognising the downward pressure on electricity wholesale prices created by decarbonisation itself, it may also be necessary to consider whether the current formulation of the LCF will remain appropriate in future.

New nuclear has an essential role to play in the decarbonisation of the electricity sector, offering a low cost source of secure and reliable low carbon electricity. We are working with the Government and others to overcome the remaining hurdles to enable a Final Investment Decision on Hinkley Point C. It will be important to build

on the work done on Hinkley Point C to ensure that there is the right legal framework and the right industrial structure in place to facilitate a series of further new nuclear developments.

Further emphasis is required on research and development and on the effective deployment of new technologies to drive and to support decarbonisation, including carbon capture and storage and electricity storage technologies.

In order to reach the 2050 target, there will have to be a large change in domestic heating, including enabling the electricity network infrastructure to cost-effectively cope with the new loads. This will require initiatives to be in place by around the start of the fifth carbon budget; these must be cost effective and should consider conflicting drivers between the national needs of generation and transmission against local network needs.

Question 6 *What, if any, is the role of consumer, individual or household behaviour in delivering emissions reductions between now and 2032? And, separately, after 2032?*

ANSWER:

EDF Energy believes that decarbonisation is essential, but in order for this to be acceptable to all involved, it must be implemented in a cost-effective manner.

It is important that consumers' understanding increases as to why decarbonisation is required and how they can contribute. An increased acceptance for the need for emissions reductions for customers will make it easier to accept the increased energy costs required to achieve this.

Changing behaviour is very difficult and developments in Government policy have an essential role in promoting this change. Policies should be designed to encourage customers to reduce their household emissions, and technical solutions such as smart metering will help with this.

Recognising the requirement for greater electrification of heating, Government will need to consider policy costs recovered through household energy bills so that policy costs levied on electricity bills rather than gas bills do not act as a disincentive to decarbonisation.

EDF Energy supports the need for smart metering to increase customer awareness of their energy consumption. This could lead to a reduction in consumption, as well as appropriate tariffs that shift demand which should lead to less running of high

carbon intensity marginal plant.

The vast majority of the existing housing stock will still be used in 2050 and therefore, EDF Energy recognises the need for increased thermal efficiency in homes, to reduce greenhouse gas emissions. The Government should look to create a sustainable industry which is not reliant on a short term subsidy.

Achievement of the 2050 target will necessarily require an overhaul of domestic heating in the UK, most of which is likely to occur after 2032. The Government must ensure that this change secures public acceptability and that it considers all individuals, to ensure that it is fair and that the appropriate heating type is used.

Question 7 *Is there evidence to suggest that actions to further reduce emissions after 2032 are likely to be more or less challenging to achieve than actions in the period up to 2032?*

ANSWER:

EDF Energy strongly believes that the action to ensure emissions reduction must be carried out in a way that reduces emissions as quickly as possible, whilst considering the costs. The later it is left to reduce emissions, the greater the costs will be to achieve the required emissions reductions. Therefore, it is crucial that there continues to be a strong effort to maintain the cost-effective path of emissions reduction in the period to 2032. This will ensure that the burden after 2032 is not too great to achieve the 2050 target and also recognises that some of the work required after 2032 is reliant on work prior to 2032 or technological improvements. EDF Group is engaged in the research and development effort to find solutions to these challenges.

It is important that work is done now, as has begun and should continue with EMR, to ensure that the pathway to the statutory 2050 emissions reduction is as cost-effective as possible. This means ensuring that there is an overall policy which not only looks at emissions reductions in the near term, but also setting up policies which will look to encourage future emissions reduction.

We envisage that this will require a largely decarbonised electricity generation by the end of the fifth carbon budget period. This will require that there is a rapid decarbonisation, within which some issues will need to be addressed. Notably, policies will need to be put in place to ensure that development lead times are accounted for and that there is an adequate project pipeline, which will be facilitated by policy stability and Government support.

The Government must consider the challenges of developing intermittent renewable generation as well as increased distributed generation, and take a whole system view and ensure that it is able to cope with the infrastructure effects as well as the additional costs which stem from an increasing amount of intermittent renewables and non-despatchable distributed generation on the system.

In order to meet the 2050 emissions reduction target, the majority of domestic heating will need to be decarbonised, which will be achieved through a combination of electrification, shared heat networks (district heating or resistive heating) and heat pumps. Additionally, transport will also be required to be largely decarbonised, by a movement to electrification.

Prior to 2032, it is not expected that there will be a large scale change in domestic heating, but it is expected that there will need to be a step change in this direction, meaning that policies should be put in place to facilitate this large societal change, as well as ensuring that they can be carried out at the lowest cost possible.

Question 8 *Are there alternatives for closing the 'policy gap' to the fourth carbon budget that could be more effective? What evidence supports that?*

ANSWER:

A stable regulatory environment is crucial for investors and also current asset operators, with plans to extend the life of these assets, such as some of EDF Energy's nuclear assets. EDF Energy believes that EMR is a policy that has driven forward cost-effective decarbonisation of the UK as well as security of supply at lowest costs to customers. It is important that this is continued, in this decade and into the 2020s, which will require clarity on the structure of the Levy Control Framework beyond 2020, as well as the funds available, as soon as possible. We strongly believe that, alongside other low carbon sources, nuclear new build will play a large role in reducing emissions, whilst ensuring a reliable, cost-effective electricity source for years to come.

Existing nuclear plants will continue to make a major contribution during the period of the fourth carbon budget and they should continue to be properly remunerated by the market framework for the provision of reliable capacity and low carbon energy.

Decarbonisation of electricity is bringing with it significant changes in electricity generation and demand, including the increasing penetration of intermittent generation and the growth of distributed generation. It is important to take a total system view that considers customer demand, networks and generation to ensure the effective management of the impacts and appropriate allocation of costs of

these changes on system operation. In the absence of major breakthroughs in electricity storage or demand side management, there will be a limit on the contribution that intermittent renewable generation can make because of the increasing cost arising from the curtailment of generation when the volume of intermittent and “must run” generation exceeds demand.

The CCC has stated that they could be expecting Carbon Capture Storage (CCS) to contribute 10 GW by 2030. This technology will need to be proven on an industrial scale or an alternative may need to be considered.

The Carbon Price Floor will remain important to provide the price signals in the electricity generation sector that will promote investment in new and existing low carbon generation and also ensure low load factors of high carbon electricity generation.

There will need to be policies required to push demand reduction and decarbonisation of heating and transport. For example, significant savings can be made for a typical property off the gas grid, by switching from an oil boiler to a heat pump. There is an installed base of 1.1 million oil and LPG boilers off gas and hence an opportunity to target these specific customers.

Question 9 *Are the investments envisaged in the National Infrastructure Plan consistent with meeting legislated carbon budget and following the cost-effective path to the 2050 target? Would they have wider implications for global emissions and the UK's position in international climate negotiations?*

ANSWER:

The National Infrastructure Plan is broadly consistent with the cost-effective path to the 2050 target but will need to be reviewed and updated in due course to ensure that this remains the case. In the latest National Infrastructure Plan it states that there will be 16GW of New Nuclear within the 2020s. The Government must ensure that there are appropriate policies and funding available to ensure that this target is attainable.

The National Infrastructure Plan has stated that there will £80bn spend in electricity generation beyond 2020. It will be necessary to ensure that this is consistent with the required expenditure to achieve the targets set for the fifth carbon budget and updated if necessary.

The National Policy Statements approved by Parliament are only designated to last until 2025. This will need to be updated to reflect longer term policy intent.

C. Budgets and action

The UK's statutory 2050 target requires actions across the economy to reduce emissions. Many of these actions will be driven by (UK and devolved) Government policy and implemented by businesses and consumers. There will be an important role for Local Authorities in successful delivery.

Although the carbon budgets do not require specific actions, they provide an important indication of the overall direction that policy will take in future. Once set, carbon budgets can only be changed if there has been a significant change in the relevant circumstances set out in the Climate Change Act.

Feedback from businesses as part of the Committee's 2013 Call for Evidence for the review of the fourth carbon budget was that stability is an important and valuable characteristic of carbon budgets.

Question 10 *As a business, as a Local Authority, or as a consumer, how do carbon budgets affect your planning and decision-making?*

ANSWER:

EDF Energy fully supports the use of carbon budgets as they provide clear investor signals as provide a signal of intent of the UK's commitment to emissions reduction and the way that these will be achieved. This coupled with policies that complement the budgets, such as through EMR will provide a stable regulatory environment, within which investors are confident to invest in new infrastructure, as well as investing in life extension of low carbon infrastructure where required and appropriate.

The carbon budgets are an important part to EDF Energy's long term planning, as it explicitly shows the country's ambitions regarding decarbonisation and how the policies will develop to ensure this. This will give stability and provide confidence in our plans to build low carbon technologies within the UK. Carbon budgets provide confidence in the long-term direction of markets as they respond to enduring climate change policy initiatives.

Question 11 *What challenges and opportunities do carbon budgets bring, including in relation to your ability to compete internationally? What evidence do you have for this from your experience of carbon budgets to date?*

ANSWER:

Carbon budgets provide an opportunity to invest with confidence in new low carbon generation to replace existing assets that are reaching end of life; rather than replacement higher carbon emitting assets, such as CCGTs.

It is possible that, especially in the short term, the UK will set carbon budgets that will result in electricity decarbonisation which is at a higher rate than other countries. Such scenario could provide concerns over carbon leakage and we note that the Government has implemented policies to protect energy intensive industries in this respect.

EDF Energy supports the further development of the European internal market through increased interconnection with other systems where this brings economic benefits. The economic case must be compelling and should not be driven solely by differentials in power prices driven by policy measures (for example, where the GB power price is higher than the European power price, partly driven by the Carbon Price Floor.) In general, we believe that incremental increases in interconnection between Great Britain and its closest neighbours are more likely to be beneficial than longer interconnectors to more distant markets.

Within the carbon budgets, the calculations of the emissions from the EU ETS traded sector is dictated solely by its proportion of the UK's share of the EU ETS. This means that even if the power sector decarbonises to a greater level than required by the EU 2030 targets, the carbon accounting will be limited to the EU ETS calculation. The CCC should consider how to account for, and if necessary mitigate, the case where the UK's traded sector is notably lower than its proportion of the EU target, so that the non-traded sector is not relatively over-burdened.

Question 12 *What would you consider to be important characteristics of an effective carbon budget? What is the evidence for their importance?*

ANSWER:

An effective carbon budget is one that has clear goals, which are achievable yet promote real change. To complement these goals there should be clear policies which support the achievement of the targets. These targets should be split in a

realistic and fair way for the different areas considered by the CCC.

When determining the carbon budget, it must be clear how different emissions are defined. An example is regarding the definition of the electricity sector and the way that auto-generation is defined. It must also be clear how the movement of emissions abroad (both within EU and out of the EU) are considered.

There must be a concise set of progress indicators, with both leading and lagging parameters to confirm what has been achieved and what the future trends are. Notably for leading indicators, it is of greater importance to have a pipeline of value for money projects, which will enable the UK to meet the 2050 target, as opposed to arbitrary targets. This will avoid a short term mindset which can lead to expensive technologies being utilised, as opposed to ensuring through a holistic view, the cost-effective path to 2050.

D. Other issues

The Climate Change Act requires that in designing the fifth carbon budget we consider impacts on competitiveness, fiscal circumstances, fuel poverty and security of energy supply, as well as differences in circumstances between UK nations. High-level conclusions on these from our advice on the fourth carbon budget were:

- **Competitiveness** risks for energy-intensive industries over the period to 2020 can be addressed under policies already announced by the Government. Incremental impacts of the fourth carbon budget are limited and manageable.
- **Fiscal impacts.** The order of magnitude of any fiscal impacts through the 2020s is likely to be small, and with adjusted VED banding and full auctioning of EU ETS allowances could be neutral or broadly positive.
- **Fuel poverty.** Energy policies are likely to have broadly neutral impacts on fuel poverty to 2020, with the impact of increases in electricity prices due to investment in low-carbon generation being offset by energy efficiency improvement delivered under the Energy Company Obligation. Incremental impacts through the 2020s are likely to be limited and manageable through a combination of further energy efficiency improvement, and possible income transfers or social tariffs.
- **Security of supply** risks due to increasing levels of intermittent power generation through the 2020s can be managed through a range of flexibility options including demand-side response, increased interconnection and flexible generation. Decarbonisation of the economy will reduce the reliance

on fossil fuels through the 2020s and thus help mitigate any geopolitical risks of fuel supply interruption and price volatility.

- **Devolved administrations.** Significant abatement opportunities exist at the national level across all of the key options (i.e. renewable electricity, energy efficiency, low-carbon heat, more carbon-efficient vehicles, agriculture and land use).

Question 13 *What evidence should the Committee draw on in assessing the (incremental) impacts of the fifth carbon budget on competitiveness, the fiscal balance, fuel poverty and security of supply?*

ANSWER:

There are a number of sources, which the CCC should draw upon to arrive at its budget.

The Energy Technologies Institute (ETI) work is a critical contributor to the decarbonisation debate, particularly beyond 2030. DECC' has its own analysis as well as potentially differing views from other stakeholders that engage in long-term scenario analysis such as larger energy suppliers/generators and other energy companies.

When considering the fiscal balance, the CCC should explore the potential future reduction in fuel imports for electricity (and the associated savings), to contrast with the costs of investment in new low carbon electricity generation.

Question 14 *What new evidence exists on differences in circumstances between England, Wales, Scotland and Northern Ireland that should be reflected in the Committee's advice on the fifth carbon budget?*

ANSWER:

The statutory 2050 target applies to the UK as a whole and therefore, it is important that there is a co-ordinated pathway accounting for the different infrastructure and resources within the different nations that exist within the UK.

There are differences in the interim emissions reduction targets, for example in Scotland where for example there is a Scottish 2020 target of a 42% greenhouse gas emissions reduction (The Climate Change (Scotland) Act (2009)), compared to

the UK's 2020 target of 34% (as defined within the third carbon budget and the revised Climate Change Act).

There can be good reason for differences in targets between the different nations of the UK, reflecting differences in circumstances, availability of resources and public opinion. Overall, these national targets should be consistent with the carbon budgets that are being set on a UK level. The reasons for the emissions reductions targets and whether these are sustainable must be considered and whether they are driving towards the long-term goal, as opposed to meeting short term interim targets.

Policy should be set on a UK level and should only be changed to facilitate different regions or nations of the UK where this is in the best interests of achieving the UK's national targets and is fair.

Question 15 *Is there anything else not covered in your answers to previous questions that you would like to add?*

ANSWER:

No.