Committee on Climate Change

Independent advice to government on building a low-carbon economy and preparing for climate change

The Sixth Carbon Budget and Welsh emissions targets – Call for Evidence

Background to the UK's sixth carbon budget

The UK Government and Parliament have adopted the Committee on Climate Change's (CCC) recommendation to target net-zero emissions of greenhouse gases (GHGs) in the UK by 2050 (i.e. at least a 100% reduction in emissions from 1990).

The Climate Change Act (2008, 'the Act') requires the Committee to provide advice to the Government about the appropriate level for each carbon budget (sequential five-year caps on GHGs) on the path to the long-term target. To date, in line with advice from the Committee, five carbon budgets have been legislated covering the period out to 2032.

The Committee must provide advice on the level of the sixth carbon budget (covering the period from 2033-37) before the end of 2020. The Committee intends to publish its advice early, in September 2020. This advice will set the path to net-zero GHG emissions for the UK, as the first time a carbon budget is set in law following that commitment.

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).

The Act also specifies other factors the Committee must consider in our advice on carbon budgets – the advice should be based on the path to the UK's long-term target objective, consistent with international commitments and take into account considerations such as social circumstances (including fuel poverty), competitiveness, energy security and the Government's fiscal position.

The CCC will advise based on these considerations and a thorough assessment of the relevant evidence. This Call for Evidence will contribute to that advice.

Background to the Welsh third carbon budget and interim targets

Under the Environment (Wales) Act 2016, there is a duty on Welsh Ministers to set a maximum total amount for net Welsh greenhouse gas emissions (Welsh carbon budgets). The first budgetary period is 2016-20, and the remaining budgetary periods are each succeeding period of five years, ending with 2046-50.

The Committee is due to provide advice to the Welsh Government on the level of the third Welsh carbon budget (covering 2026-30) in 2020, and to provide updated advice on the levels of the second carbon budget (2021-25) and the interim targets for 2030 and 2040. Section D of this Call for Evidence (covering questions on Scotland, Wales and Northern Ireland) includes a set of questions to inform the Committee's advice to the Welsh Government.

UK Committee on Climate Change Call for Evidence on the Sixth Carbon Budget

Response from Friends of the Earth Scotland

5th February 2020

Introduction

Friends of the Earth Scotland welcomes the opportunity to make this submission. We are part of the Friends of the Earth International network - the world's largest grassroots environmental network, uniting 74 national member groups, over 2 million members and 5,000 local activist groups around the world. FoE Scotland is an independent Scottish charity with a network of thousands of supporters and active local groups across Scotland. Friends of the Earth Scotland's vision is of a world where everyone can enjoy a healthy environment without exceeding their fair share of the planet's resources, now and in the future.

A. Climate science and international circumstances

Question 1: The climate science considered in the CCC's 2019 Net Zero report, based on the IPCC Special Report on Global Warming of 1.5°C, will form the basis of this advice. What additional evidence on climate science, aside from the most recent IPCC Special Reports on Land and the Oceans and Cryosphere, should the CCC consider in setting the level of the sixth carbon budget?

The Paris Agreement sets the well-known goal of "Holding the increase in the global average temperature to well below 2°C" above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels" (Article 2.1). It also clearly states, in Article 2.2, that "this Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities" and that developed countries should take the lead.

The UK is a wealthy industrialised nation with a historic responsibility for contributing to climate change, and greater wealth and capacity to tackle the crisis. **In applying the IPCC Special Report to this advice, the CCC must take an equitable approach to calculating the UK's fair share of the remaining global carbon budget.** The CCC should refer to the Stockholm Environment Institute and Ecoequity work on the Climate Equity Reference Project [1], and work by Holz, Kartha and Athanasiou on 'Fairly sharing 1.5: national fair shares of a 1.5ºC compliant global mitigation effort' [3].

Question 1: The climate science considered in the CCC's 2019 Net Zero report, based on the IPCC Special Report on Global Warming of 1.5°C, will form the basis of this advice. What additional evidence on climate science, aside from the most recent IPCC Special Reports on Land and the Oceans and Cryosphere, should the CCC consider in setting the level of the sixth carbon budget?

The final advice should make clear what carbon budget the CCC has used, the likelihood of meeting 1.5ºC and which methodology was applied to calculate the UK's fair, equitable share.

We would also like to draw the committee's attention to the recent **'Production Gap report'** from the UN Environment Programme (UNEP), which assesses the gap between the Paris Agreement goals and the planned production of coal, oil and gas [3]. The report finds that current plans are to produce "50% more fossil fuels by 2030 than would be consistent with a 2ºC pathway, and 120% more than would be consistent with a 1.5ºC pathway". This is clearly inconsistent with the IPCC SR1.5 report finding that, for a 1.5ºC pathway, fossil fuel emissions must decline by 10% per year.

Our own research "Sea Change: Climate Emergency, jobs and managing the phase-out of UK oil and gas extraction" report finds that the 5.7 billion barrels of oil and gas in already-operating UK oil and gas fields will exceed the UK's share in relation to the Paris climate goals, whereas industry and government aim to extract 20 billion barrels by 2050 [4]. The CCC advice on the sixth carbon budget must address fossil fuel extraction and production.

[1] https://climateequityreference.org/about-the-climate-equity-reference-project-effort-sharing-approach/
[2]https://link.springer.com/article/10.1007/s10784-017-9371-z
[3] http://productiongap.org/2019report/
[4] https://foe.scot/wp-content/uploads/2019/05/SeaChange-final-r2-web.pdf

Question 2: How relevant are estimates of the remaining global cumulative CO_2 budgets (consistent with the Paris Agreement long-term temperature goal) for constraining UK cumulative emissions on the pathway to reaching net-zero GHGs by 2050?

Estimates of the remaining global cumulative carbon budgets for 1.5ºC are the most important criteria to consider when setting the UK carbon budget. As stated above, and based on the UNFCCC principles of equity and common but differentiated responsibility, the UK share of the global budget should be apportioned equitably to reflect our historical responsibility and our resources and capacity to act faster and reduce emissions further than the global average.

Question 3: How should emerging updated international commitments to reduce emissions by 2030 impact on the level of the sixth carbon budget for the UK? Are there other actions the UK should be taking alongside setting the sixth carbon budget, and taking the actions necessary to meet it, to support the global effort to implement the Paris Agreement?

The level of UK carbon budgets should be calculated on the basis of what science and justice demands is required to play our fair share in limiting warming to 1.5ºC, not by comparison with neighbours. As a wealthy, industrialised nation with a historic responsibility for climate change the UK has a duty to take the lead in reducing emissions and pursuing the radical, transformational change the IPCC 1.5ºC report so clearly stated is required.

The IPCC Special Report on Global Warming of 1.5ºC found that globally, emissions reductions of 45% are required by 2030 in order to have any chance of meeting 1.5ºC. Clearly therefore, by focusing only on the sixth carbon budget which covers the period from 2033-37 is too late. The fourth carbon budget was set in 2011, four years before the Paris Agreement. Since then, emissions have continued to rise and the global carbon budget has rapidly diminished. The fourth and fifth budgets should be revisited and revised.

In order to support the global effort to implement the Paris Agreement, the UK must fully honour all of the Paris Agreement commitments. With regards to mitigation, this means acting on the basis of equity as outlined in the answer to Q1. The UK also has obligations under the Paris Agreement to deliver climate finance to developing countries for mitigation, adaptation, loss and damage, technology transfer and capacity building.

In addition, the UK must begin a managed phase-out of fossil fuel extraction. This must include amending the 2015 Infrastructure Act and the Principal Objective of "maximising the economic recovery (MER) of UK petroleum" from UK waters, and setting an end point for extraction from UK waters that aligns with Paris. Subsidies for fossil fuel extraction and production must be rapidly phased out, including tax breaks, and redirected to fund a Just Transition. Financing for all international fossil fuel projects must come to an end, including via UK Export Finance.

Budgets must also be set and policies implemented to reduce the UK's consumption emissions from imported goods and services, instead of simply offshoring our emissions and requiring other countries to continue emitting on our behalf.

Finally, the UK must focus on domestic emissions reductions and not relying on carbon markets or the purchase of carbon credits to meet budgets.

Question 4: What is the international signalling value of a revised and strengthened UK NDC (for the period around 2030) as part of a package of action which includes setting the level of the sixth carbon budget?

The UK holds the presidency of COP26, which marks the beginning of the Paris Agreement. With all parties due to submit their first NDCs by the end of this year with the aim of increasing ambition and closing the emissions gap, it would be of very strong signalling value for the UK to mark the presidency and the COP with a strong NDC.

Of course, NDCs cover the period to 2030 and the sixth carbon budget is for the period of 2033-37, so the fourth and fifth carbon budgets would need to be revised in order to submit a strengthened NDC that would deliver the global goal of net-zero emissions by 2050 as set out in IPCC SR1.5.

Furthermore, with the UK likely to have to submit our own NDC after exiting the European Union, a strong NDC could influence and increase to the EU ambition.

B. The path to the 2050 target

Question 7: The fourth and fifth carbon budgets (covering the periods of 2023-27 and 2028-32 respectively) have been set on the basis of the previous long-term target (at least 80% reduction in GHGs by 2050, relative to 1990 levels). Should the CCC revisit the level of these budgets in light of the net-zero target?

As set out in the response to questions 3 and 4 above, the fourth and fifth carbon budgets which together cover the vital next decade from 2023 – 32, were both set and adopted prior to the Paris Agreement in 2015 and the IPCC Special Report.

The Paris Agreement represents a significant increase in ambition compared to previous global commitments on climate change, which reflects advances in climate science. The fourth and fifth carbon budgets were set when the consensus of world leaders on climate ambition was that as expressed in the 2009 Copenhagen Accord, *"to hold the increase in global warming below 2 degrees Celsius".*

The increase in global ambition combined with the rapidly dwindling carbon budget, the need for urgent action to rapidly reduce emissions in the next decade, as identified by the IPCC Special Report on Global Warming of 1.5ºC, the need to address the UK's cumulative emissions and the requirement to submit an NDC with increased ambition by the end of this year all mean it is imperative the fourth and fifth carbon budgets are revised.

C. Delivering carbon budgets

Question 11: Can impacts on competitiveness, the fiscal balance, fuel poverty and security of supply be managed regardless of the level of a budget, depending on how policy is designed and funded? What are the critical elements of policy design (including funding and delivery) which can help to manage these impacts?

Managing impacts through a future budget level is a question of political will. Negative impacts can be prevented and in many cases policies to reduce emissions can result in improvements, through concerted fiscal and policy effort. If delivering on the Paris Agreement goals, an appropriate carbon budget would require an end to new exploration and a winding down of currently operating fields within the 5.7bn barrels available in them [1]. It is clear that replacing domestic extraction without relying on imports in this scenario requires significant effort, however it is achievable. Claims that continued extraction is needed rely on challengeable assumptions about demand and an underestimation of the capacity of renewables if enabled. There is a growing body of literature showing that continued extraction is not necessary to meet demand [2, 3, 4, 5].

To manage impacts there must be a willingness from the Government to support the private sector further and faster and in certain instances, the Government must be prepared to play a stronger role in delivery where the private sector is persistently slow to act. It took 16 years for the UK to become the fifth largest oil and gas producer in the world following the first discovery of oil in the North Sea in 1969. This happened through significant government action across infrastructure, training, supply chain support and through incentives and licensing that encouraged companies to operate quickly. Government support continues to this day and is serving to undermine efforts to grow clean industries by setting a confusing direction for the future UK economy.

In short, the UK and Scottish government must initiate a concerted policy and fiscal effort to rapidly build the clean energy industry to at least the extent they have with the oil and gas industry. This must come with a clear direction of travel, a phase-out of fossil fuels in line with Paris Agreement goals beginning with an end to the legislative commitment to Maximising Economic Recovery of oil and gas required by the 2015 Infrastructure Act.

[1] “Sea Change” Friends of the Earth Scotland, Oil Change International, Platform (2019) https://foe.scot/resource/sea-change-climate-report/
[2] Paul Allen et al., Zero Carbon Britain: Rethinking the future, Centre for Alternative Technology, 2013, https://www.cat.org.uk/info-resources/zerocarbon-britain/research-reports/zero-carbonrethinking-the-future/
[3] Mark Jacobson et al., “Matching demand with supply at low cost in 139 countries among 20 world regions with 100% intermittent wind, water, and sunlight (WWS) for all purposes”, Renewable Energy 123, 3 February 2018, pp.236-248, https://doi.org/10.1016/j.renene.2018.02.009

Mark Jacobson et al., “100% Clean and Renewable Wind, Water, and Sunlight All-Sector Energy Roadmaps for 139 Countries of the World”, Joule 1, pp.108–121, 6 September 2017, https://web.stanford.edu/group/efmh/jacobson/Articles/I/ CountriesWWS.pdf

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Christopher Clack et al., "Evaluation of a proposal for reliable low-cost grid power with 100% wind, water, and solar", PNAS, June 2017, 114, 26, pp. 6722-6727, https://doi.org/10.1073/ pnas.1610381114

John Bistline and Geoffrey Blanford, "More than one arrow in the quiver: Why '100% renewables' misses the mark", PNAS, 12 July 2016, 113, 28, E3988, https://doi.org/10.1073/ pnas.1603072113

[4] Vivid Economics, Keeping It Cool: How the UK can end its contribution to climate change, Report prepared for WWF, November 2018, https:// www.wwf.org.uk/sites/default/files/2018-11/NetZeroReportART.pdf

[5] Vivid Economics, A Climate of Possibility: Harnessing Scotland's natural resources to end our contribution to climate change, Report prepared for WWF Scotland, January 2019, https://www.wwf.org.uk/sites/default/files/2019-01/WWF_Report_VIVID_Jan_2019.pdf

Question 12: How can a just transition to Net Zero be delivered that fairly shares the costs and benefits between different income groups, industries and parts of the UK, and protects vulnerable workers and consumers?

In order to deliver a Just Transition to Net Zero that fairly shares the costs and benefits across the UK, a comprehensive Just Transition Strategy, developed in partnership with workers, communities and trade unions and encompassing all sectors of the UK economy, is essential. This must take particular account of the expected impact on energy intensive industries. For vulnerable workers, retraining and skills development should be provided, to then follow into an equivalent jobs guarantee that ensures no decline in standards for workers transitioning away from the fossil fuel industry. Communities and regions that are currently built around industries that are likely to be impacted should be the focus of efforts to create clean industries and work.

Moreover, the scale and pace of change necessary to meet climate targets has been described by the IPCC as "far-reaching and unprecedented" [1]. This is a challenge, however it is also an opportunity to address structural weaknesses in the UK economy by creating an industrial strategy framed around the principles of a Just Transition. If managed well, our transition can move us from dependency on fossil fuels while addressing issues such as spatial inequality and structural unemployment as well as contributing to some degree to alleviating the dependency of the UK economy on the services sector now sitting at 71% of GDP in the UK[2] and 76% in Scotland[3].

From a costs perspective, while achieving net zero will require significant investment, the financial cost of failing to act will be higher[4]. Delivering policies through a Just Transition Strategy, backed up with the fiscal and policy support necessary to deliver it, can produce not only a fairer sharing of the costs and benefits of those specific measures, but also a fairer UK than at present. In our energy sector for example, the "Big Six" suppliers repeatedly come last in customer satisfaction tables, fuel poverty is forecast to worsen and local energy projects are restricted - moving to net zero is an opportunity to transform energy and other sectors.

Question 12: How can a just transition to Net Zero be delivered that fairly shares the costs and benefits between different income groups, industries and parts of the UK, and protects vulnerable workers and consumers?

Delivering a Just Transition in the right way, with a comprehensive industrial strategy will move the UK towards meeting its climate targets while building work and industry that is sustainable, well-paid and highly skilled across the country. It should focus on ensuring workers, communities and consumers most likely to be impacted by the transition are part of consultations and able to direct the work, industries and local economies that will replace those we move beyond. It should see the transition as an opportunity to address weaknesses in the economy that exacerbate existing inequalities, by focusing on creating an economy that is sustainable and far more inclusive.

[1] Intergovernmental Panel on Climate Change, Special Report on Global Warming of 1.5ºC
[2] World Bank national accounts data, and OECD National Accounts data,
[3] Scottish Government, GDP quarterly national accounts for Scotland: 2019 Q3, https://www.gov.scot/publications/gdp-quarterly-national-accounts-for-scotland-2019-q3/
[4] Organisation for Economic Co-operation and Development, Climate change: Consequences of inaction, https://www.oecd.org/fr/environnement/climate-change-consequences-of-inaction.htm

D. Scotland, Wales and Northern Ireland

Question 13: What specific circumstances need to be considered when recommending an emissions pathway or emissions reduction targets for Scotland, Wales and/or Northern Ireland, and how could these be reflected in our advice on the UK-wide sixth carbon budget?

We are answering this question only with regards to Scotland.

On energy, there are large differences in resources, ambition and philosophy between the Scottish and UK governments. Offshore floating wind power, tidal power and onshore wind all have great potential in Scotland and are progressing well where the market rules allow. Wave power is some time away but could be very important in Scottish waters. New nuclear power is politically unthinkable in Scotland. There is high potential for further large pumped storage facilities but currently no market mechanism to support their development.

Scotland's energy and climate targets are generally significantly ahead of those of the UK as a whole, allowing more ambitious policy to be implemented in Scotland and allowing UK targets to be met somewhat faster because of over-achievement in Scotland. Scotland has higher climate change targets for 2030 and 2040 and the net-zero by 2045 target, although as we point out in Q14 below these are still not strong enough. Further examples include phasing out the need for petrol and diesel cars and vans by 2032, 100% of electricity demand to be met from renewables by 2020 (although this is running behind) and 50% of energy to come from renewables by 2030, although this too should be strengthened now.

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Scotland has a higher proportion of 'hard to treat' homes and extensive tenement areas in cities mean Scotland needs somewhat different solutions for improving domestic energy efficiency and making provision for charging electric vehicles in future. Electric vehicle charging infrastructure is well developed in Scotland, compared to the UK average and there is a strong commitment to electrifying the entire public sector car fleet by 2025.

Scotland is in a position to move relatively more quickly on an energy transition due to further developed discussions about Just Transition in recent years. There is an opportunity to utilise the existing structure of the Just Transition Commission if its role is extended to last for the duration of climate change targets as a body that can monitor progress and provide recommendations to Government on policies that would contribute emissions reductions that also improve social inclusion.

The different legislative framework that sets Scotland's climate targets and policy requirements must be understood and taken into account. Scotland has legally binding annual targets rather than carbon budgets, and must get regular advice from the UKCCC on the current calculation of the Scottish fair and safe emissions budget, and whether the interim targets are correct. The CCC must also advise on the level of aviation multiplier to be set when calculating Scotland's share of international aviation emissions.

The Act sets a legal requirement for the UKCCC to consider a prescribed set of 'target setting criteria' when setting or assessing climate targets including the objective of not exceeding the fair and safe Scottish emissions budget which is defined as *"the aggregate amount of net Scottish emissions of greenhouse gases for the period 2010 to 2050 as recommended by the relevant body as being consistent with Scotland, in line with the principles set out in article 3 of the United Nations Framework Convention on Climate Change, contributing appropriately to the holding of the increase in global average temperature to well below 2°C above pre- industrial levels, and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.*" **The UKCCC must refer to the principles set out in article 3 of the UNFCCC, and calculate the fair and safe emissions budget accordingly on the principles of equity and common but differentiated responsibility.**

Question 16: Do you have any evidence on the appropriate level of Scotland's interim emissions reduction targets in 2030 and 2040?

The 2019 Climate Change (Emissions Reductions Targets) (Scotland) Act set new targets for Scotland to reduce emissions by 75% by 2030, 90% by 2040, and 100% by 2045, all compared to the 1990 baseline. However, these targets fail to sufficiently

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increase ambition in order to deliver Scotland's fair share of emissions cuts in line with the Paris Agreement. The targets were set on the basis of bottom up technical feasibility, rather than an equitably apportioned share of the global carbon budget for 1.5ºC.

As a wealthy nation with greater historic responsibility for contributing to climate change, Scotland must deliver our fair share of emissions reductions. Using a Fair Shares analysis which takes into account Scotland's historical responsibility for contributing to the climate crisis and our higher capacity to tackle emissions, it is clear that Scotland needs to be on a much steeper trajectory and reaching 100% emissions reductions earlier. During the passage of the Climate Bill, Friends of the Earth Scotland was advocating for at least 86% emissions reductions by 2030, and 100% by 2040. However, with the passage of time and the dwindling carbon budget, every delay means a steeper trajectory is required.

Tyndall centre research states "for Scotland to make its minimum 'fair' contribution to the Paris "well below 2ºC" commitment, its post-2017 energy-only carbon budgets should be between 229 and 394 MtCO2", requiring mitigation of at least 10% each year to have begun in 2018. The delay will require "even more fundamental mitigation in the early 2020s".

As Scotland sets annual targets rather than carbon budgets, interim targets are of utmost importance. The CCC should also consider suggesting a stronger 2025 target to stimulate early action.

Finally, the annual targets should result in a curved trajectory over time rather than a straight line between interim targets, in order to deliver more valuable early action and reduce cumulative emissions.

Scotland's role in delivering the Paris Agreement - a report by the Tyndall climate change research centre, May 2018 https://foe.scot/wp-content/uploads/2018/11/Scotlands-role-in-the-Paris-Agreement_-Tyndall-Centre-research.-May-2018.pdf

E. Sector-specific questions

Question 24 (Industry): How can the UK achieve a just transition in the fossil fuel supply sectors?

Achieving a just transition in the fossil fuel supply sectors will require accountability, regionally specific policy development, and maximum transferability of skills with equivalent conditions. Trade unions should be actively involved in any employment transition, new industries' governance structures should be more accountable to workers through things like codetermination (trade unions and workers on companies'

Question 24 (Industry): How can the UK achieve a just transition in the fossil fuel supply sectors?

boards) and any transition plan should be accountable to the local communities most affected. This means regional plans and programmes must be designed with leadership from local governments and a range of local stakeholders [1].

In terms of equivalent conditions, energy workers must be offered jobs on at least equivalent terms and conditions and permanent contracts, and this should begin with an assessment of the skills that exist in the UK workforce and the skills that will be required in a fossil fuel economy. Workers should be able to access training and be supported to learn the necessary skills for equivalent work.

One of the greatest barriers to achieving a just transition in the fossil fuels supply sectors are the ongoing mixed signals being given to the industry. The legislative commitment to Maximising Economic Recovery is incompatible with the Paris Agreement[2] and is a serious barrier to the investment and infrastructure necessary to transition from fossil fuels. It is essential that industry is given a clear direction of travel and this should be for extraction of fossil fuels to be phased out in line with the Paris Agreement.

Furthermore, a just transition must include oil-dependent regions and supply chains, not simply its workers. This means community development investment programmes, which could include re-tooling the supply chain, building regional innovation hubs [3], improving logistics and connectedness including rail and internet [4] and reinvesting locally while supporting businesses to do the same.

[1] “Sea Change” Friends of the Earth Scotland, Oil Change International, Platform (2019).
[2] “Sea Change” Friends of the Earth Scotland, Oil Change International, Platform (2019). https://foe.scot/wp-content/uploads/2019/05/SeaChange-final-r2-web.pdf
[3] University of Aberdeen, “£40m hub to drive health innovation and life sciences company growth in Aberdeen”, 21 November 2018, https://www.abdn.ac.uk/news/12455/
[4] Tom Fogden, “Why Chattanooga Has the Fastest Internet in the US”, Tech.Co, 21 August 2018, https://tech.co/news/chattanooga-fastestinternet-usa-2018-08

Question 31 (Hydrogen): The Committee has recommended the Government support the delivery of at least one large-scale low-carbon hydrogen production facility in the 2020s. Beyond this initial facility, what mechanisms can be used to efficiently incentivise the production and use of low-carbon hydrogen? What are the most likely early applications for hydrogen?

Hydrogen is a distraction from electrification and increasing renewables, and should only be considered in very limited, exceptional circumstances such as on islands or for inter-seasonal storage of energy. In all cases, any hydrogen produced should be created by electrolysis from renewable electricity rather than from gas.

Question 31 (Hydrogen): The Committee has recommended the Government support the delivery of at least one large-scale low-carbon hydrogen production facility in the 2020s. Beyond this initial facility, what mechanisms can be used to efficiently incentivise the production and use of low-carbon hydrogen? What are the most likely early applications for hydrogen?

Hydrogen from fossil fuels risks prolonged extraction of fossil fuels, rather than contributing to decarbonising the economy. Blue hydrogen is touted as being a 'clean' fuel, however this relies on the ability to capture carbon from CCS which is a hugely expensive technology that does not even remove all the carbon from fossil fuels.

The applications being considered for hydrogen include heating, transport, for all of which there are advanced suitable renewable alternatives. Battery storage is also at an advanced stage, negating the need for hydrogen here.

Question 35 (Greenhouse gas removals): What relevant evidence exists regarding constraints on the rate at which the deployment of engineered GHG removals in the UK (such as bioenergy with carbon capture and storage or direct air capture) could scale-up by 2035?

There has been growing attention given to carbon capture and storage (CCS). Despite years of work and funding, CCS is not economically viable at scale. The carbon dioxide would have to be stored for thousands of years, any leaks would have severe consequences. CCS would only ever capture 85-95% of carbon emissions, so has no place in a zero-carbon world.

Carbon Capture and Storage is a dangerous distraction from the critical task of ending our use of fossil fuels and delivering transformational change across our society. The false solution of CCS prolongs fossil fuel extraction, claiming this silver bullet technology is just around the corner. It is our view that this technology should not be developed, and presents a distraction from delivering the level of systemic change required to tackle climate change.

Likewise, **Bioenergy with Carbon Capture and Storage (BECCS)** must be rejected in Scotland. The ability of BECCS to achieve substantial emissions reductions at the required scale is unproven, and delivering the level of emissions reduction we need would require use of a significant proportion of the world's crop land. Not only is the feasibility of this scale of change in land use questionable, but the implications on food supplies, particularly for the world's poorest communities, is highly problematic.

Instead of investing in developing CCS or BECCS, to absorb emissions, we should be focusing on reducing those emissions in the first place. This means ending fossil fuels and creating jobs in renewable energy, while delivering a step change in high-

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polluting sectors such as transport, agriculture, industry and home heating. We also need to invest in absorbing carbon through natural sinks, like restoring Scotland's damaged peatland and reafforestation.

There are no just solutions to the climate crisis that do not require a managed phase out of fossil fuels. That means an immediate end to new licences for oil and gas exploration and ending support for Maximum Economic Recovery from the North Sea, while planning for a phased and Just Transition to a 100% renewable, nuclear-free future. Energy needs must be met through domestic renewable generation, not replacing fossil fuel production with fossil fuel imports. Decisions must be made now in order to avoid becoming locked in to high-carbon future.

Question 38 (Infrastructure): What scale of carbon capture and storage development is needed and what does that mean for development of CO_2 transport and storage infrastructure over the period to 2030?

Despite years of work and funding, CCS is not economically viable at scale. It is a dangerous distraction from the vital task of urgent emissions reductions at source.

Investment and infrastructure for greater roll out of renewables and supporting a Just Transition should be prioritised instead.