

Dear Committee Members,

On behalf of my colleagues at the Stockholm Environment Institute (SEI), I would like to thank you for soliciting input on these important questions. Since our founding nearly 30 years ago, SEI has been at the forefront of climate change research, connecting scientific findings and insights with practical policy advice. We support and advise decision-makers around the world grappling with how to transition to a low-carbon future.

In this context, we are pleased to share with the Committee a growing body of research and insights that illustrate the importance of government action in actively managing the reduction of fossil fuel *production* as well consumption. These inputs reflect the experience we have gained through [the SEI Initiative on Fossil Fuels and Climate Change](#), including two international conferences on the topic held in Oxford; a *Climatic Change* journal special issue; and numerous other high-profile publications and events.

We would be delighted to provide further information as necessary, and stand ready to support the Committee as it proceeds in fulfilling its vitally important mandate.

Yours faithfully,

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## Building a zero-carbon economy – Call for Evidence

### Question and response form

#### Part 1: Climate Science

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

#### ANSWER:

A key finding of the SR15 is that CO<sub>2</sub> emissions from fossil fuels will need to decline rapidly: ~10% per year to remain on a 1.5°C-compatible pathway (or ~4% per year to remain on a 2.0°C-compatible one) [1]. The evidence suggests that, in addition to the pursuit of traditional policies that reduce fossil fuel consumption (e.g. promoting renewable energy, energy efficiency, carbon pricing, and emissions trading), achieving this goal will also require policies that limit extraction and delivery of oil, coal and gas [2].

Until recently, most governments have been reluctant to slow fossil fuel production. However, developments in the past few years indicate a growing interest in constraining investment in, and preparing for a transition away from, fossil fuels. Moratoria on new production exploration licenses, divestment from fossil fuel holdings, and transition plans for workers, for instance, are gaining ground globally [3].

It is increasingly clear that such “supply-side” policies can bring important benefits. They can widen the mitigation cost curve, allowing greater emission reductions at the same (or lower) cost than demand-side policies alone [4]. They can help address carbon leakage risks [5]. They can reduce carbon lock-in effects, making it easier for lower-carbon alternatives to compete with fossil fuels, and weakening the carbon entanglement that makes it hard for many governments to adopt strong climate policies [6]. Focusing directly on fossil fuels and the actors that supply them can also bring added pressure to bear on climate change mitigation efforts and could help make the case for more ambitious global climate action [7].

However, there is much potential for governments to strengthen their engagement in this area. Against this backdrop, we recommend consideration of a range of additional resources in the supply-side literature, including, as a starting point:

- Lazarus, M. & van Asselt, H. (2018) Fossil fuel supply and climate policy: exploring the road less taken. *Climatic Change* 150(1-2): 1-13.
- Green, F., & Denniss, R. (2018). Cutting with both arms of the scissors: the economic and political case for restrictive supply-side climate policies. *Climatic Change* 150(1-2) 73-87.
- Fæhn, T., Hagem, C., Lindholt, L., Mæland, S. & Rosendahl, K. E. (2017) Climate policies in a fossil fuel producing country: demand versus supply side policies. *The Energy Journal*. 38(77–102).
- Piggot, G., Erickson, P., van Asselt, H., & Lazarus, M. (2018). Swimming upstream: addressing fossil fuel supply under the UNFCCC. *Climate Policy*, 18(9), 1189-1202.

**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?

[1] These estimates reflect the median of scenarios in the IPCCSR15 scenario database.

<https://db1.ene.iiasa.ac.at/IPCCSR15DB/dsd?Action=htmlpage&page=about>.

[2] Lazarus & van Asselt, above.

[3] Verkuil, C., Piggot, G., Lazarus, M., van Asselt, H. & Erickson, P. (2018). Aligning fossil fuel production with the Paris Agreement: Insights for the UNFCCC Talanoa Dialogue. Stockholm Environment Institute Policy Brief.

[https://unfccc.int/sites/default/files/resource/11\\_12\\_13\\_SEI\\_Talanoa\\_Fossil\\_Fuels.pdf](https://unfccc.int/sites/default/files/resource/11_12_13_SEI_Talanoa_Fossil_Fuels.pdf).

[4] Faehn et al., above.

[5] Erickson, P., Lazarus, M., & Piggot, G. (2018). Limiting fossil fuel production as the next big step in climate policy. *Nature Climate Change*, 8, 1037–1043.

[6] Erickson, P., Lazarus, M., & Tempest, K. (2015). Carbon Lock-In from Fossil Fuel Supply Infrastructure. Stockholm Environment Institute Discussion Brief. <http://www.sei-international.org/publications?pid=2805>.

[7] Green & Denniss, above.

**Question 2 (CO<sub>2</sub> 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: -

## 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:

In addition to territorial and consumption-based accounting, the UK could consider implementing a parallel extraction-based accounting system that reflects the emissions associated with the coal, oil, and gas produced in the country and ultimately released into the atmosphere as CO<sub>2</sub> [1][2]. This will allow the country to set targets and assess how it is progressing in aligning its fossil fuel production with Paris Agreement goals.

[1] Harrison, K. (2015) International carbon trade and domestic climate politics. *Global Environmental Politics*, 15, 27–48.

[2] Steiner, K.W., Liniger, C., Meyer, L.H., Muñoz, P., & Schinko, T. (2016). Multiple carbon accounting to support just and effective climate policies. *Nature Climate Change*, 6, 35–41.

**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:

In addition to valuable opportunities in support of carbon pricing, technology transfer, and capacity building, the UK can support efforts internationally by demonstrating leadership in limiting further development of fossil fuel infrastructure domestically and supporting other countries' efforts to lessen dependence on fossil fuel supply. The UK can:

- Set an example by incorporating supply side policies into its nationally determined contribution (NDC) and long-term low greenhouse gas emission development strategy under the UN Framework Convention on Climate Change (UNFCCC) process [1] [2].
- Deliver on its pledges under the G7 and G20 to phase out fossil fuel subsidies, including to fossil fuel production. Research by the Overseas Development Institute (ODI) and others suggests that the UK is “performing relatively poorly in comparison to other G7 countries in the phase-out of its fossil fuel subsidies” [3].
- Provide financial support to enable developing countries to realise a just and equitable transition away from fossil fuels. In addition, bilateral and multilateral spending should not lock in fossil fuel infrastructure abroad. Analysis by CAFOD and ODI indicates that between 2010-2014, more than twice as much UK spending on energy in developing countries went to fossil fuels, compared to renewable energy [4].
- Advocate internationally for actions that restrain fossil fuel production. In this regard, the UK's involvement in the Powering Past Coal Alliance sends an important signal about the need to move beyond coal-fired power. However, the Alliance could strengthen its effectiveness and long-term relevance by addressing coal *production* in addition to consumption.

[1] Piggot, G., Erickson, P., van Asselt, H., & Lazarus, M. (2018). Swimming upstream: addressing fossil fuel supply under the UNFCCC. *Climate Policy*, 18(9), 1189-1202.

[2] Verkuijl, C., Piggot, G., Lazarus, M., van Asselt, H. and Erickson, P. (2018). Aligning fossil fuel production with the Paris Agreement: Insights for the UNFCCC Talanoa Dialogue. Stockholm Environment Institute Policy Brief. [https://unfccc.int/sites/default/files/resource/11\\_12\\_13\\_SEI\\_Talanoa\\_Fossil\\_Fuels.pdf](https://unfccc.int/sites/default/files/resource/11_12_13_SEI_Talanoa_Fossil_Fuels.pdf).

[3] UK G7 Fossil Fuel Subsidy Scorecard, p.1. <https://www.odi.org/sites/odi.org.uk/files/resource-documents/12215.pdf>.

[4] CAFOD (2017). UK support for energy in developing countries 2010-14. CAFOD policy brief. [https://cafod.org.uk/content/download/42738/483740/version/4/file/Policy%20briefing%20UK%20energy%20support%202010\\_14%20final.pdf](https://cafod.org.uk/content/download/42738/483740/version/4/file/Policy%20briefing%20UK%20energy%20support%202010_14%20final.pdf).

**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: -

### 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: -

**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: -

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

ANSWER: -

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

ANSWER: -

**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?

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**ANSWER:**

Supply-side solutions are gaining momentum globally, including in the UK. The UK could further support such policies and approaches including by:

- Ending the licensing of fossil fuel production: the Welsh government's new policy towards coal mining is an important development in this regard [1].
- Reviewing and significantly reforming or dropping the Maximising Economic Recovery Strategy for the UK (MER UK) strategy to ensure consistency with Paris Agreement targets [2].
- Phasing out its fossil fuel subsidies: analysis by ODI and others identifies "numerous measures" supporting both fossil fuel production and consumption in the UK, and relatively poor transparency and accounting in this regard, compared to other European countries [3].

For the shift away from fossil fuels to be politically and morally acceptable, there is a need to introduce measures that ensure no one gets left behind [4]. In this regard, Scotland's "Just Transition Commission" is an important and welcome step in ensuring a fair and just transition away from fossil fuels, and this approach could be expanded to other regions [5]. The UK could also draw lessons from other countries already leading the way in this area. New Zealand, for instance, has begun phasing out permits for offshore oil development, and planning for a just transition for oil workers [6]. Likewise, Spain has recently announced a plan to close coal mines, and support workers and regions' transition to new roles [7].

The International Labour Organisation (ILO) and the UNFCCC Secretariat have compiled helpful guidance on just transition planning that the UK government could use to build a just transition strategy into its climate change planning [8][9].

[1] Welsh Government. (2018). Planning Policy Wales, edition 10.

<https://beta.gov.wales/sites/default/files/publications/2018-12/planning-policy-wales-edition-10.pdf>.

[2] Oil and Gas Authority (OGA). (2016). The Maximising Economic Recovery Strategy for the UK as reproduced by the OGA. <https://www.ogauthority.co.uk/media/3229/mer-uk-strategy.pdf>.

[3] Van der Burg, L., & Runkel, M. (2017). Phase-out 2020: monitoring Europe's fossil fuel subsidies: United Kingdom, p. 2. <https://www.odi.org/sites/odi.org.uk/files/resource-documents/11787.pdf>.

[4] Green, F. (2018). Transition policy for climate change mitigation: Who, what, why and how?. Centre for Climate Economics & Policy Working Paper. <https://coaltransitions.files.wordpress.com/2018/05/transition-policy-for-climate-change-mitigation-2.pdf>.

[5] Scottish Government. (2018). Leading the way to a low-carbon future: Just Transition Commission to advise on decarbonisation. <https://news.gov.scot/news/leading-the-way-to-a-low-carbon-future>.

[6] Ministry of Business, Innovation and Employment. (2018). Just Transition: Making a Just Transition to a low emissions economy. <https://www.mbie.govt.nz/info-services/just-transition>.

[7] Ministerio para la Transición Ecológica. (2018). Framework Agreement for a Just Transition of Coal Mining and Sustainable Development of the Mining Regions for the Period 2019-2027. <https://www.miteco.gob.es/es/prensa/ultimas-noticias/el-gobierno-y-el-sector-de-la-miner%C3%ADa-del-carb%C3%B3n-firman-un-acuerdo-para-la-transici%C3%B3n-justa-y-el-desarrollo-sostenible-de-las-comarcas-mineras/tcm:30-483648>.

[8] UNFCCC. (2016). Just Transition of the Workforce, and the Creation of Decent Work and Quality Jobs. <https://unfccc.int/sites/default/files/resource/Just%20transition.pdf>.

[9] ILO. (2015). Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All. [http://www.ilo.org/wcmsp5/groups/public/---ed\\_emp/---emp\\_ent/documents/publication/wcms\\_432859.pdf](http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_432859.pdf).

## 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:

The low-carbon transition is associated with both opportunities and risks. It is the government's responsibility to maximise the former and minimise the latter.

A clear risk to UK society is the delay of the energy-system transition that — barring unexpected advances in carbon capture and storage — inevitably follows from the Paris Agreement's goals. Delaying this transition would be associated with a far more disruptive and costlier societal impacts further down the line.

Conversely, in terms of opportunities, a shift away from fossil fuel production can free up spending for other areas investment, including renewable energy and a just transition for communities and workers dependent on fossil fuel extraction [1]. A redirecting of support to fossil fuels would also have significant co-benefits in areas such as air pollution mitigation, and associated healthcare savings [2][3].

[1] Organisation for Economic Co-operation and Development (2017). Investing in Climate, Investing in Growth. <http://www.oecd.org/env/investing-in-climate-investing-in-growth-9789264273528-en.htm>.

[2] Watts, N., Amann, M., Arnell, N., Ayeb-Karlsson, S., Belesova, K., et al. (2018). The 2018 report of the Lancet Countdown on health and climate change: shaping the health of nations for centuries to come. *The Lancet*, 392(10163) 2479-2514.

[3] West, J.J., Smith, S.J., Silva, R.A., Naik, V., Zhang, Y., et al. (2013). Co-benefits of mitigating global greenhouse gas emissions for future air quality and human health. *Nature Climate Change*, 3(10), 885–89.

**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: -

## Part 5: Devolved Administrations

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

ANSWER: -

## 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?

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