Quick headlines on the UK & climate change *(for Svante & Greta)*

The UK Climate Act & the CCC

The UK passed its Climate Change Act in 2008. In my view it is one of the most progressive pieces of climate change legislation produced by any nation, but it has not been used to deliver the mitigation rates that the language of the Act permits.

The Act established the Committee on Climate Change (the CCC) as the principal body for advising government on climate change issues. The CCC repeatedly claim to be independent of government, but this is not really the case. At best they are semi-autonomous, and provide advice to the UK government that broadly fits with the Government's economic agenda. I've attached a short document (2 sides) that outlines why my & Tyndall Centre colleagues analysis comes to such different conclusions to those of the CCC.

The CCC's analysis has been used in planning cases to justify ongoing fossil fuel development (e.g. shale gas) and airport expansion (e.g. Heathrow), amongst other high-carbon developments.

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The CCC, along with most of my analysis, focuses on 'territorial' emissions, not those arising from our imports and exports (i.e. not consumption-based inventories).

Compared with 1990, the UK has achieved a 36% reduction in territorial CO2 (based on the Global Carbon Project/Atlas data) – this excludes emissions from international aviation & shipping and those associated with imports and exports. If these are included, the reduction is nearer 10% since 1990 – or an average of 0.4% each year (i.e. total carbon emissions associated with running the UK are almost unchanged since 1990).

You will likely hear that the UK has reduced CO2 by over 40% since 2005. Again this excludes aviation, shipping, imports & exports. Include these and the reduction is nearer 19%.

BUT: this reduction is not primarily a consequence of pursuing climate change policies. Rather the two main reasons are:

1) An EU directive on air quality (not CO2) has essentially forced the UK to phase out its existing coal powerstations. The directive was the EU's 2001 'Large Combustion Plant Directive' (LCPD) which required EU coal stations to meet a minimum air pollution standard or to rapidly reduce the number of hours they could operate – leading to their early closure. The UK's stations were mostly too old to be affordably retrofitted so have been increasingly phased out and replaced, primarily by gas powerstations (which emit around half the emissions/unit of energy to that of coal). As a detail, it may be worth noting the UK's carbon price floor (CPF) did have some influence on the rate of closure, but the (non-climate) LCPD was the main reason for closure; *i.e. not climate policies*

2) The economic recession and slow down following the 2007 banking crisis had a big impact in changing the UK emission pathway. Look at the emission curves for many of the world nations and there is a very evident change in emission trends following the banking crisis. Again – *not a climate policy*

All this said, successive UK Governments have also driven an increase in renewable electricity (much less so the current Government who have effectively stopped onshore wind turbine development & removed most solar subsidies). Nevertheless, the last decade or so has seen a very substantial rise in offshore wind and, to a lesser extent, solar generation.

IMPORTANT TO NOTE:
Separate to the UK's territorial emissions, the UK government has enthusiastically supported (including tax breaks) evermore exploration of fossil fuels.

a) it is very committed to developing a new UK shale gas industry.
Gas, as you know, is a high carbon energy source. By mass it is 75% carbon – so burn it & you get a lot of carbon dioxide. A fully developed shale gas industry is also likely to emit significant levels of methane into the atmosphere.

b) it continues to permit exploration for new North Sea oil and gas fields. The climate & energy minister 'Clair Perry' has actively welcomed BP's new Clair Ridge oil platform & its forthcoming oil production, equivalent to 50 thousand tonnes of CO2 per day, or one quarter of a billion tonnes of CO2 across the life of the oil field. She has also welcomed the new Glengorm gas field and proposed development, equating to another 100 million tonnes of CO2.

c) the UK government has just overseen planning permission for a new coal mine, intending to produce coal specifically for use in UK steel making and also for exporting.

So, whilst the government claims to be active on climate change, it is at the same time enthusiastically supporting ongoing fossil fuel exploration.

As David MacKay, the government's previous Chief Scientific Advisor on 'energy and climate change' noted in his 2013 report to the UK government, *"if a government brings any additional fossil fuel reserve into production …. it is likely [to] increase cumulative emissions in the long run. This increase would work against global efforts on climate change."*

Prof. David MacKay was a highly respected Cambridge academic, who spoke his mind and did not bow down to political pressure. Sadly he died in 2016 at only 49 years – but his work and statements are still regularly used today.

UK official Government & CCC targets

The UK Government (under advice fro the CCC) is aiming for an 80% reduction in emissions by 2050, compared with 1990. This reduction ***does include*** international aviation and shipping emissions (but not imports & exports).

The UK (set by the CCC) has rolling five year carbon budgets; starting with 2008-2012. These budgets ***do not include*** international aviation and shipping emission. The CCC has stated that the UK Government is set to miss its Fourth (2018-2022) and Fifth (2028-2032) carbon budgets.

The CCC assumes very high levels of Carbon Dioxide Removal (CDR) in the future. Around 37MtCO2 of Negative Emissions Technologies by 2050 and 13MtCO2 of net sequestration in forests. Using very conservative assumptions – and based on the CCC's start date for NETs of 2035, this equates to the UK relying on between 3 and 7 GtCO2 of CDR across the twenty-first century (pro-rated on population this is somewhere 400 and 800GtCO2 of CDR globally).

With the 80% target, the assumptions on 'carbon dioxide removal' (CDR) and the five-year carbon budget framework, the CCC recommend around **3-4%** reductions in emissions each year. Last year the UK achieved a reduction rate of 2.5% (excluding growing emissions from aviation and shipping).

Tyndall Manchester analysis/targets

Our headline conclusions are, building on SR1.5, that we have a total of **4GtCO2 that the UK can emit from 2020 onwards** (I suggest this may to be revised downwards if additional feedbacks are factored in to the AR6 report and if the current rise in global methane concentrations is found to be significantly due to a warming tropics).

The 4GtCO2 equates to annual mitigation rate rapidly rising to 12% p.a.; this includes all UK territorial emissions.

However, the UK Government and the CCC choose to privilege international aviation and shipping. If we use a very conservative reading of the Government's official estimates of these two sectors, then the rest of the UK economy needs to rapidly increase mitigation rates to around **16%** reductions in emissions each year.

The main reasons for our analysis delivering such different conclusions to those developed by the CCC and used by the UK Government are outlined in the attached document. But put simply:

1) we base our work on the latest IPCC analysis (SR1.5) – *the CCC does not (yet)*
2) we factor in international aviation and shipping emissions into our budgets - *the CCC does not*
3) we take account of international equity – i.e. give a little more time for poorer nations to decarbonise (as per the Paris Agreement) – *the CCC does not*
4) we do not assume the Carbon Dioxide Removal & Negative Emissions technologies will work at a huge planetary scale – *the CCC does*