



Department
of Energy &
Climate Change

Department of Energy & Climate Change
3 Whitehall Place
London
SW1A 2AW

www.gov.uk

Dr Mayer Hillman
mayer.hillman@blueyonder.co.uk

Our ref: TO2013/19866/RL

11 November 2013

Dear Dr Hillman,

Thank you for sending copies of your two papers: '*Climate change: quo vadis et quis custodiet?*' and '*Comments on the subject of positive feedback in climate modelling*'. I apologise for the late response to your original request. Unfortunately the Secretary of State will not be able to read and comment on the reports due to time constraints; however they were passed to the appropriate policy teams.

I agree that evidence continues to show that the risks of climate change are real and urgent. The new assessment report by the Intergovernmental Panel on Climate Change (IPCC) demonstrates that scientists are more certain than ever that human activity is causing the climate to change. The report also highlights that global action will be required to keep warming to safe levels.

The Climate Change Act 2008, established the world's first long-term legally binding national framework to help tackle the dangers of climate change, by putting in place a system of carbon budgets. In your paper you argue that carbon reduction targets are inadequate, but the emissions reductions set out in the Climate Change Act reflect the advice of the independent Committee on Climate Change on an appropriate UK contribution to a global mitigation effort, which would be consistent with keeping global temperature rises to below 2°C.

The UK's robust plan of policies already put us on course to meet our carbon budgets to 2022, including reforming the electricity market; supporting continued take-up of energy efficiency measures through the Green Deal and Energy Company Obligation (ECO); building a market for renewable heat through the Renewable Heat Incentive (RHI); and continuing to push for the European Union (EU) to show more ambition by moving to a tighter 2020 emissions target.

However, the Government does recognise that a global solution is required to minimise the impacts of dangerous climate change. The Climate Change Act has made us a credible leader in working towards this aim, and we will continue to push for a legally-binding framework, applicable to all under the United Nations Framework Convention on Climate Change (UNFCCC).

In your paper '*Comments on the subject of positive feedback in climate modelling*', which you submitted to the Environmental Audit Committee last July, you suggest that the omission of methane release and other positive feedback mechanisms from the Met Office's climate models is not being fully reflected in the scientific advice that the Met Office provides to Government on climate change. However, this is not the case; such feedbacks are fully recognised but are considered to have potential effects over long timescales, beyond this century, and cannot be reliably quantified at present.

In particular, you state that a loss of snow cover in the Russian and Canadian tundra is releasing increased amounts of methane. However, there is currently very little evidence for this. Atmospheric concentrations of methane started to increase again in 2007, though the rate of increase is much less than the rate during the 1980s when Arctic temperatures were lower. According to the IPCC's latest Assessment Report (AR5), published in September 2013, the recent increase is largely the result of emissions' increases in tropical regions, recent rapid industrialisation in the growing Asian economies and a small contribution from high latitude wetlands (see Chapter 6, p41).

The AR5 assessment of a climate feedback from thawing permafrost concludes that it is likely to be a relatively slow positive feedback that should be considered over multi-century time scales (Chapter 6, p76). For this century current models suggest carbon release from thawing permafrost is likely to be relatively modest, even for the worst case RCP8.5 emissions scenario (Chapter 6, p56). However, given that the complete dynamics of thawing permafrost are not captured by current models and the possibility that the permafrost feedback could be potentially large, there is on-going research work by various institutions, including the Met Office Hadley Centre, to incorporate improved methane feedbacks into their climate models. We understand that the Met Office has recently developed a prototype methane model but this is still work in progress.

I hope that this is helpful.

Yours sincerely,

Ross Lewis
DECC Correspondence Unit