From the Chief Scientific Adviser to HM Government
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Dear Nigel (IF I may!)

When we met in March you invited my reactions on your book *An Appeal to Reason: A cool look at global warming*. I should start by saying that I thoroughly enjoyed it.

There are three aspects on which I might usefully comment.

Firstly, there are a number of points related to the underlying science of climate change that are incorrect or presented in a misleading way. I offer a brief review of these in the attachment to this letter.

Secondly, I wanted to comment on the important issue of handling scientific uncertainties and imperfections in our knowledge. You are, of course, absolutely right to point out that there are uncertainties in climate projections. However, a critical point is that these uncertainties relate predominantly to the detailed spatial and temporal changes that we can expect. The basic conclusions that greenhouse gases cause warming, that the average global temperature is rising linked to increases in greenhouse gases from human activities and that this trend can be expected to continue is based on well established scientific principles and wide-ranging evidence.

Similarly, it is clear that the world will face serious detrimental impacts to which many people and ecosystems will be unable to adapt if greenhouse gas concentrations continue to rise.

So, while we certainly do not understand every detail of the changes we can expect, I believe it would be an inappropriate interpretation of the evidence to use the imperfections in our knowledge as a reason for inaction. Indeed, the scientific evidence tells us that climate change is more likely to be worse than current projections suggest rather than less severe, due primarily to the potential effects of dominant positive feedbacks in the carbon cycle.

Ultimately it is for policy-makers to judge the balance of risks, including those extending across countries and generations. However it is clear from the scientific evidence and climate model outputs - models that operate based on fundamental laws of physics - that the risks are real and, I believe it is not

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going to far to say, potentially catastrophic in the absence of strong global action to reduce emissions.

Finally, there are a number of areas in which I would echo your views. I strongly agree on the importance of improved water management. Also, I believe that where GM technologies have the potential to solve problems in agricultural production, and that conventional breeding or other technologies cannot, then clearly we need to be thinking about adopting them, where these are assessed to be safe to health and the environment.

I agree too that in the context of climate change and energy security challenges the potential for nuclear power to provide a reliable, tested and economic source of low-carbon energy is clear.

You are also right to flag up that claims regarding the impacts of climate change – such as changes in the incidence of malaria – must be based on robust scientific evidence. We are in further accord that there are a number of other major challenges, including poverty and disease, that we must tackle, although I would argue that most of these are intrinsically linked to climate change and that tackling climate change will help rather than hinder our efforts to address them.

In my role as the Government's Chief Scientific Adviser I do not feel placed to comment directly on the arguments you present on the economic costs of tackling climate change, beyond noting where there are linkages with the scientific points I have highlighted above.

On a related matter, I note that in your oral evidence to the HoC S&T Committee Inquiry into UEA you suggested that scientists at CRU delayed the release of temperature data they held. I hope that I can clarify this by laying out the situation as I understand it. The majority of the data in the CRU dataset are derived from the same freely-available raw data sets used by NOAA and NASA. However, the CRU dataset was compiled with the aim of comprehensiveness and therefore also includes data derived from station data obtained directly from countries, institutions and scientists on the understanding that this would not be passed on. This is why it has been necessary for the Met Office to write to rights holders requesting permission to publish them in the form held by CRU. Clearly, however, anyone wishing to obtain the underpinning data could have requested them directly from the relevant countries, institutions and scientists.

I hope you find this information helpful.

My Apologies for the delay in responding. Volcanic ash has been rather on my horizon recently

**Professor John Beddington**

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