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Scientific Evidence on Climate Change Mitigation

I committed to write to you with the evidence we are using to ensure that we are basing our future prospects in terms of decarbonisation on sound, solid and verifiable science. The Government's policy to support ambitious action on climate change both at home and internationally reflects the mainstream scientific consensus¹ including the comprehensive and authoritative Intergovernmental Panel on Climate Change (IPCC) assessments.

The scientific consensus on climate change reflects thousands of peer-reviewed studies from scientists all over the world. These have concluded that warming of the climate system is unequivocal, and that it is extremely likely that human activities are the dominant driver of warming since the mid-20th Century. Many major scientific institutions and societies, such as the Royal Society, have released statements confirming this².

Anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. Recent climate changes have had widespread impacts on human and natural systems. Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems.

These risks depend on the magnitude and rate of warming, geographic location, levels of development and vulnerability, and on the choices and implementation of adaptation and mitigation options. Model results show that under a low emissions scenario, warming is limited, and the risks and impacts associated are minimised. Lags of varying timescales exist in the Earth's response to emissions of greenhouse gases – with some aspects of the climate responding almost instantaneously, while others take decades or more. As a result, we are locked into some level of future change for many key climate variables which have widespread human impacts, such as surface temperature warming and sea level rise³.

¹ <http://www.nationalacademies.org/includes/G8+5energy-climate09.pdf> :

<https://royalsociety.org/~media/policy/Publications/2015/21-07-15-climate-communique.PDF>

² <https://royalsociety.org/topics-policy/publications/2015/climate-communique/>

³ <https://www.theccc.org.uk/wp-content/uploads/2019/07/Briefing-note-on-time-lags-in-the-climate-system-Met-Office.pdf>

The Intergovernmental Panel on Climate Change reports have made it clear that limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks.

The IPCC's Special Report on Global Warming of 1.5°C, released last year, stated with high confidence that reaching and sustaining net zero global anthropogenic CO₂ emissions and declining net non-CO₂ radiative forcing would halt anthropogenic global warming on multi-decadal time scales⁴. The report showed that there is a range of pathways that could be followed to limit warming to 1.5°C above pre-industrial levels, but these all require a profound and unprecedented cross-sectoral transformation of our energy, land, urban and industrial systems. Under all plausible scenarios that limit warming to 1.5°C, CO₂ and other greenhouse gas emissions must peak imminently then decline rapidly (by about 45% from 2010 levels by 2030), with CO₂ reaching net zero by around 2050.

Following the publication of the IPCC's special report on 1.5°C, the government asked the Committee on Climate Change (CCC) for advice on when the UK should cut its emissions to net-zero. The resulting CCC report recommended that the UK should legislate as soon as possible to reach net-zero greenhouse gas emissions by 2050⁵. After careful consideration, the CCC concluded that Net Zero by 2050 is achievable, feasible and cost-effective.

A copy of this letter will be placed in the Libraries of the House.

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⁴ <https://www.ipcc.ch/sr15/>

⁵ <https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/>