Committee on Climate Change

Rt Hon Lord Andrew Adonis, Secretary of State for Transport

Rt Hon Ed Miliband, Secretary of State for Energy and Climate Change

9 September 2009

Dear Andrew and Ed,

CCC advice on a framework for reducing global aviation emissions

This letter sets out the Committee's advice on a framework for reducing global aviation emissions, as requested by you on 14th July 2009.

The main messages of the Committee are:

Capping global aviation emissions

- Aviation CO_2 emissions should be capped, either through a global sectoral deal or through including (domestic and international) aviation emissions in national / regional (e.g. EU) emissions reduction targets.
- Ideally all aviation CO_2 emissions would be capped. It may be necessary, however, that there is an interim phase where the cap applies to all departing and arriving flights in developed countries with exemptions for intra-developing country flights.
- The level of emissions reduction ambition under any international agreement should be no less than that already agreed by the EU (i.e. developed country net emissions in 2020 should be no more than 95% of average annual emissions from 2004-06).

Auctioning allowances in cap and trade schemes

- Emissions allowances under a cap and trade scheme should be fully auctioned so as to avoid windfall profits for airlines that would ensue under free allowance allocation.
- Aviation auction revenues are one of a number of possible sources for funding of adaptation in developing countries that should be agreed as part of a global deal in Copenhagen.
- Significant R&D that is urgently required to support innovation in the aviation industry should be considered in the context of a global deal for aviation, and funded from aviation auction revenues or other sources.

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Emission reductions within the aviation sector

- Emissions trading will be useful for an interim period in providing flexibility to achieve cost-effective emissions reductions, subject to the caveat that the carbon price in any trading scheme should provide strong signals for appropriate demand management and supply side innovation.
- The aviation industry should also plan, however, for deep cuts in gross CO_2 emissions relative to baseline projections (e.g. for developed country aviation emissions to return to no more than 2005 levels in 2050) which will be required as a contribution to meeting the G8's agreed objective to reduce total global emissions in 2050 by 50%.

Non-CO_2 effects of aviation

- Non-CO_2 effects of aviation must be addressed as part of any international framework through commitment to a schedule for introduction of appropriate policy instruments (e.g. covering NOx, cirrus and contrails). Given current scientific understanding, early introduction of measures to reduce NOx emissions may be feasible and should be seriously considered.

We consider these messages in more detail in four sections:

1. Capping global aviation emissions
2. Auctioning allowances in cap and trade schemes
3. Emissions reductions in the aviation sector
4. Non-CO_2 effects of aviation

1. Capping global aviation emissions

Rationale and options for a global cap

Analysis set out in our December 2008 report showed that global aviation emissions could account for a significant proportion of total allowed emissions in 2050 (e.g. 15-20% of all CO_2). We argued that aviation should be covered by a policy framework which:

- Faces aviation with an appropriate cost of carbon so as to provide an incentive both for supply side abatement and demand side constraint
- Ensures that the total level of emissions (from aviation plus all other sectors) is reduced in line with appropriate targets (i.e. to at least halve emissions of GHGs by 2050).

Two high level options that meet these criteria are:

- A global sectoral deal, where aviation is treated separately and is given its own cap.
- Including international aviation emissions in national or regional (e.g. EU) emissions caps supported by national or regional policy levers (e.g. inclusion of aviation in the EU ETS).

To the extent that both options could be designed in a way to achieve an equivalent outcome – a global cap, or a set of linked national / regional caps that together comprise a global cap - the Committee does not have a strong preference for one or the other.

Phased introduction of a cap

Ideally all global CO_2 aviation emissions would be capped. This could be supported by allowance and auction revenue allocation mechanisms that reflect common but differentiated commitments from developed and developing countries.

In practice, however, the Committee accepts that there may be an interim phase where emission caps apply to all departing and arriving flights in developed countries with exemptions for intra-developing country flights. This type of cap would capture the bulk of global aviation emissions (e.g. developed country aviation emissions alone currently account for around two thirds of global aviation emissions).

The level of emissions reduction ambition

In our December 2008 report we argued that the cap on aviation emissions in the EU ETS together with caps for other sectors under the EU's 30% GHG emissions reduction target is consistent with the Committee's climate change objective. The Committee therefore believes that the EU ETS cap is appropriate and should not be weakened under any agreement to cap global aviation emissions. More generally, developed country aviation emissions should be capped at a level commensurate with the current EU ETS cap (i.e. at no more than – and possibly below - 95% of average 2004-06 aviation emissions) unless emissions reduction targets for other sectors are more ambitious than those in the EU.

2. Auctioning allowances in cap and trade schemes

The rationale for auctioning rather than free allowance allocation

The Committee believes that allowances should be auctioned in cap and trade schemes to avoid windfall profits for participants. In the UK power industry, for example, windfall profits up to £1.6 billion annually may have ensued as a result of free allowance allocation of EU ETS Phase II.

The Committee recognises that in general there may be an argument for free allowance allocation where there are concerns around competitiveness. In the case of aviation industry, however, the risk of leakage is likely to be far less pronounced

than for other industries (e.g. iron and steel). Aviation is an international industry, but production cannot be shifted to another country: steel consumed in Europe can be manufactured in Europe or China, but a flight from New York to London cannot be produced elsewhere.

In principle there could be some change in hubbing as aviation emissions are capped in some but not all countries for an interim phase. In practice, however, this would be mitigated through a cap applying to all developed country arriving and departing flights.

Funding of adaptation

It is inevitable that there will be some increase in global temperature even in scenarios where the Committee's climate objective is achieved (i.e. to keep central estimates of global temperature increase close to 2 degrees). There will therefore be a need to address climate change risks through adaptation measures. The Committee believes that a global agreement for emissions reduction should include funding for implementation of adaptation measures in developing countries. It is not for the Committee to enter discussions about hypothecation of auction revenues. It is the view of the Committee, however, that if adaptation is not funded via aviation auction revenues, then an alternative source of funding should be clearly identified.

Funding of aviation R & D

Radical innovation in engine, airframe and fuel technology is urgently required to reduce aviation emissions in the period to 2050; it is not clear, however, that the very significant funding needed to support this innovation will be forthcoming from the aviation industry. The Committee therefore believes that a funding source for aviation R&D should be identified as part of an international deal. Funding sources could include cap and trade auction revenues or commitments by national governments.

3. Emissions reductions within the aviation sector

The purchase of emission allowances (e.g. under the EU ETS) and offset credits (e.g. CDM or a successor mechanism) minimises the cost of meeting emissions reduction targets in the near to medium term when there is an abundance of abatement potential available; firms or countries which face a lower abatement cost per tonne will make more abatement effort than those with higher costs, with higher costs firms and countries paying those with lower costs to take action. The Committee therefore supports an interim period where there may be extensive trading, subject to the caveat that the carbon price in any trading scheme should provide strong signals for appropriate demand management and supply side innovation.

Analysis from our December 2008 report, however, shows that there is likely to be very limited scope to meet longer term (e.g. 2050) targets through the purchase of credits. In 2050, climate change mitigation will require all countries to limit emissions below current levels for developed countries, and the potential for developed countries to buy cheap abatement in other countries will be severely limited. The vast

majority of 2050 emissions reductions in aviation will therefore have to be achieved without the purchase of credits. This has implications for the path to 2050, where gross emissions cuts will be required through the next decades: a policy of relying too much on purchase of credits could jeopardise prospects for achieving the gross emissions cuts required in 2050.

The Committee's analysis suggests that cutting gross aviation emissions in 2050 to 2005 levels together with 90% emissions cuts in other sectors would achieve the required economy wide 80% emissions reduction in the UK. It is reasonable to assume that this target could be applied more widely to achieve the G8's objective to reduce developed country emissions by 80% in 2050. The Committee therefore recommends that an international agreement anticipates and plans for the need to limit developed country gross aviation emissions in 2050 at no more than 2005 levels; this would result in aviation emissions accounting for up to 25% of total allowed emissions in developed countries in 2050.

4. Non-CO_2 effects of aviation

The influence of aviation on climate extends beyond that due to CO_2 emissions. Although there remain uncertainties regarding the quantifications of these effects, the science is clear that they are highly likely to lead to significant additional warming. The Committee therefore proposes that non-CO_2 impacts should be addressed in any global aviation emissions deal through commitment to a schedule for introduction of appropriate policy instruments (e.g. covering NOx, cirrus and contrails).

The Committee does not have a set view on the form of inclusion, but recognises that the EU has scoped possible measures to address some of these impacts. Early introduction of measures to reduce NOx emissions may therefore be feasible and should be seriously considered, with instruments for other non-CO_2 effects to be introduced as scientific understanding of the relevant processes is developed.

We will be publishing our advice on how the UK can meet the 2050 target to reduce gross aviation emissions back to 2005 levels including consideration of scope for improvements in technology, the implications of further aviation expansion and appropriate policy levers on December 8th 2009.

Yours ever

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