Submission to the Airports Commission

Aviation and Climate Change

Stop Stansted Expansion ('SSE') was established in 2002 in response to Government proposals for major expansion at Stansted Airport. We have some 7,500 members and registered online supporters including 150 parish and town councils and local residents' groups and national and local environmental organisations. Our objective is to contain the development of Stansted Airport within tight limits that are truly sustainable and, in this way, to protect the quality of life of residents over wide areas of Cambridgeshire, Essex, Hertfordshire and Suffolk, to preserve our heritage and to protect the natural environment.

Stop Stansted Expansion
May 2013
www.stopstanstedexpansion.com

STOP STANSTED EXPANSION

Introduction

In July 2007, Aqqaluk Lynge, President of the Inuit Circumpolar Council, travelled from his home in Greenland to give evidence on the impacts of climate change on behalf of Stop Stansted Expansion ('SSE') to the Stansted 'G1' Public Inquiry, which was considering whether the Airport should be allowed to expand from a permitted throughput of 25 million passengers per annum ('mppa') to a permitted throughput of 35mppa. He said this:

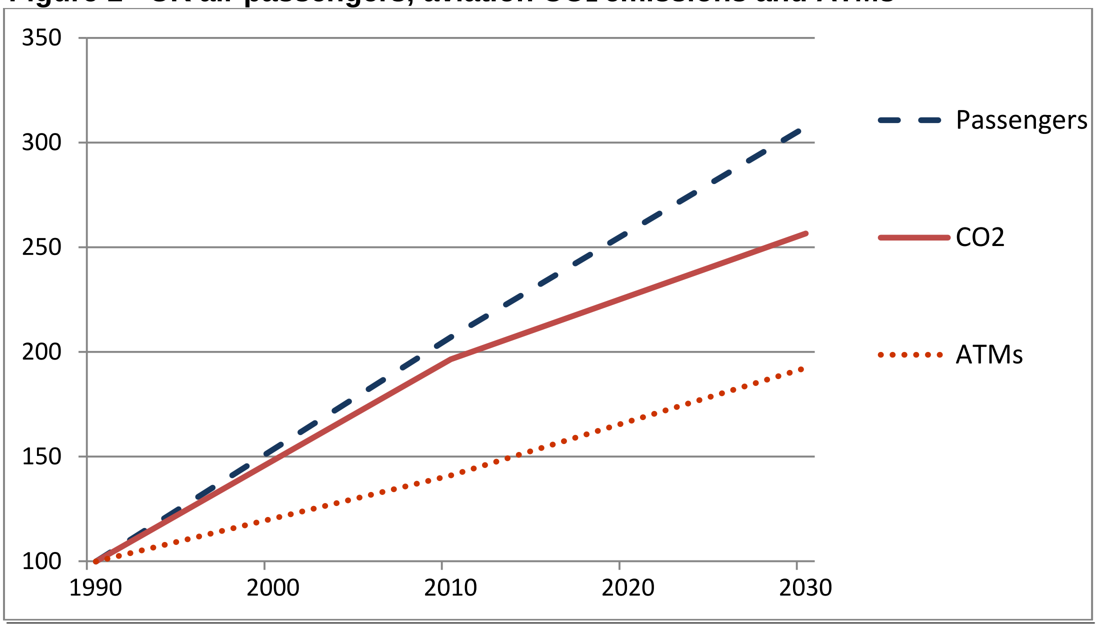
> *'You may say that the expansion of London Stansted Airport will play only a small part in increasing climate change but everyone can say that about almost everything they do. It is an excuse for doing nothing. The result of that attitude would be catastrophic. The serious consequences affecting my people today will affect your people tomorrow.'* [1]

We submit that the expansion not only of one airport, but of UK aviation generally, threatens to undermine the UK's ability to meet its climate change targets and its ability to fulfil its obligations towards the global action that is necessary to tackle climate change.

In 1990, aviation accounted for just 2.8% of the UK's carbon dioxide ('CO_2') emissions; by 2010 this had risen to 6.2%; and by 2030 it is projected to be about 15%.[2] Clearly, there is a need for action to curb the growth in aviation's CO_2 emissions, and these are only part - possibly not even the main part - of the aviation emissions problem, a point we address later in this paper.

Moreover, it is clear that the improvements in technology, particularly in aircraft engine efficiency that have taken place over the past 20 years, have done little to curb the growth in emissions from UK aviation, as can be seen in the following chart. The chart also indicates that there may be optimism bias in the CO_2 projection for 2010 to 2030.

Figure 1 - UK air passengers, aviation CO_2 emissions and ATMs



ATMs = Air Transport Movements.
Source: CAA airport statistics, UK GHG emissions inventory and DfT January 2013 forecasts.
Note: All three parameters have been indexed to 100 for the 1990 base year.

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Finally, before going on to respond to the specific questions set down in the *'Aviation and Climate Change'* discussion paper, we would remind the Commission of the three earlier submissions we have made[3] and ask that this submission be read in conjunction with these.

[1] See pre-submitted Proof of Evidence at: http://www.stopstanstedexpansion.com/documents/SSE22a_Proof_Climate_Change_Impacts.pdf.

[2] The 1990 and 2010 percentages are based on CO_2 inventory data (including international aviation and shipping) at https://www.gov.uk/government/publications/final-uk-emissions-estimates. The 2030 percentage is based on the DfT's January 2013 aviation CO_2 forecasts for 2030 and estimated UK CO_2 emissions in 2030 based on a trajectory which reduces total UK CO_2 emissions by 80% by 2050 compared to 1990 levels. See also Annex A.

[3] *'Aviation Demand Forecasting'*, *'Criteria for Assessing Options'*, and *'Aviation Connectivity and the Economy'*.

Response to the specific questions posed in the Commission's *'Aviation and Climate Change'* discussion paper.

Q1: Do you consider that the DfT CO_2 forecasts present a credible picture of future UK aviation emissions? If not, why not?

1.1 As stated in our submission on *Aviation Demand Forecasting* (March 2013) we believe the Commission should focus on the forecasts for 2030 rather than 2050. In that paper we drew attention to the high degree of uncertainty in forecasting the long term demand for air travel. There is even more uncertainty in forecasting aviation's CO_2 emissions long term. The volume of air travel will obviously be the main determinant but there are also other variables.

1.2 The extent to which improvements in technology will be able to lessen aviation emissions in the future is a major uncertainty beyond 2030 and we have doubts about the industry's claims in this respect. As far as we are aware, no radical 'step-change' improvements are currently on the drawing board and so it is little more than guesswork to predict the efficiency impact of new technology beyond 2030.

1.3 There is not even a high degree of certainty in forecasting the demand for air travel and, by extension, aviation CO_2 emissions, even ten years ahead. The Department for Transport ('DfT') *Future of Air Transport* White Paper ('ATWP') in 2003 predicted unconstrained air travel demand of 500mppa by 2030 but the DfT is now predicting unconstrained demand of 'just' 320mppa by 2030, a 36% reduction.

1.4 Our submission on *Aviation Demand Forecasting* argued that fewer ATMs would be needed in 2030 than projected by the DfT[4] because of the use of larger aircraft and higher load factors. If our assessment is accepted by the Commission on this point, the DfT's CO_2 emissions projections would need to be revised downwards.

1.5 Historically, there has been a close long term correlation between aviation emissions and passenger numbers, as can be seen from Figure 1 above and as set out very clearly by a DfT Minister in 2009 in response to a Parliamentary Question.[5] The Committee on Climate Change ('CCC') also noted that, between 1990 and 2007, aviation CO_2 emissions increased by 120% and passenger numbers by 130%.[6]

1.6 Figure 1 above also shows that aviation CO_2 emissions have increased at a faster rate than the increase in ATMs, despite the benefit of higher load factors and improved fuel efficiency. The main reason is that long haul traffic is increasing at a faster rate than short haul - a trend which the DfT predicts will continue. It therefore seems to us optimistic for the DfT to project that aviation CO_2 emissions will increase at a *slower* rate that the increase in ATMs between 2010 and 2030, the comparable figures being a 31% increase in CO_2 emissions for a 37% increase in ATMs. This is very different from what happened between 1990 and 2010, when there was a 97% increase in aviation CO_2 emissions for just a 41% increase in ATMs.[7]

1.7 We submit that there is scope for very significant error in forecasting CO_2 emissions even to 2030 and that it is simply not credible to rely on unrealistically optimistic projections for 2050 in the absence of evidence that major technological improvements are in the pipeline, especially taking account of the long lead times for development and airline fleet replacement.

1.8 Finally, in response to this question, we would remind the Commission that the DfT's CO_2 forecasts are based on constrained demand. If additional capacity were to be provided to avoid constraints on demand, UK aviation emissions would be more than the 43.5 $MtCO_2$ projected by the DfT for 2030.

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[4] *'UK Aviation Forecasts',* DfT, Jan 2013, Annex F.
[5] See, for example, Written Parliamentary Answer by Jim Fitzpatrick , Hansard Col 1604, 4 Mar 2009. http://www.publications.parliament.uk/pa/cm200809/cmhansrd/cm090304/text/90304w0004.htm.
[6] *'Meeting the UK aviation target – options for reducing emissions to 2050'*, CCC, Dec 2009, p12 and p14.
[7] See Annex A.

Q2: To what extent do you consider that the analysis presented in this paper supports or challenges the argument that additional airport capacity should be provided?

2.1 The Government is committed to reducing UK CO_2 emissions by 80% by 2050 compared to 1990 levels. We do not believe that it will be possible to achieve that objective without a clear framework, including carbon budgets, for UK aviation emissions. As stated in the Commission's discussion paper (para 3.19), in 2009 the then Government established a sector-specific carbon target for UK aviation. For the sake of clarity the exact commitment given to Parliament by the then Secretary of State, in 2009, was to establish a *'new enforceable target to reduce UK aviation carbon dioxide emissions below 2005 levels by 2050'* [8] and, as the CCC noted:

> *'The fact that the target is set in terms of gross rather than net emissions (i.e. it relates to actual emissions rather than emissions net of purchase of credits from other sectors or from the international carbon markets) reflects an assumption that the supply of cheap credits will be exhausted over time and that it is therefore important for the aviation sector to focus on reducing its own emissions.'* [9]

2.2 In its December 2009 report, the CCC concluded that, consistent with containing aviation CO_2 emissions to below their 2005 levels by 2050 (i.e. below 37.5 $MtCO_2$) and taking account of its assessment of the benefits that would stem from improvements in fleet fuel efficiency and increased use of biofuels, it would still be possible, in the period 2005-2050, for the number of ATMs to grow by about 55% and the number of passengers carried to grow by about 60%. The CCC did however provide an important caveat relating to aviation's non-CO_2 impacts, saying, in effect, that the scope for growth may need to be revised downwards to take account of aviation's non-CO_2 emissions, when there was a greater degree of scientific certainty about their impact.[10]

2.3 The present Government has yet to ratify the 37.5 $MtCO_2$ target for UK aviation by 2050 but, having declared its intention to be *'the greenest government ever'* there must be a strong expectation that the target will be ratified in due course.

2.4 As stated earlier, we believe the Commission should focus on 2030 rather than 2050 and we submit that the 2030 target should also be 37.5 $MtCO_2$. This is, in fact, more generous than the projection implied by the UK aviation industry's view that *'CO_2 emissions will rise until 2020 but then level off and fall to below 2005 levels by 2050'*, especially when it is noted that this was based on the assumption of a three-fold growth in passenger numbers over the same period.[11] According to the latest DfT forecasts, it will now be approximately a two-fold growth.[12]

2.5 The DfT's central forecast for 2030 is for constrained demand of 312.6mppa and it expects this to give rise to emissions of 43.5 $MtCO_2$, i.e. 16% more than a 37.5 $MtCO_2$ target. This, however, should be viewed as a 'best case' scenario. Between 1990 and 2010, aviation CO_2 emissions increased at a far faster rate than the growth in ATMs (see Annex A) but the DfT has assumed that between 2010 and 2030 they will increase more *slowly* than the growth in ATMs. This might be plausible if the fastest growth sector was the short haul market but the opposite is the case. If the 1990-2010 relationship between ATM growth and CO_2 emissions were to be repeated in the period 2010-2030, aviation CO_2 emissions would rise to 61.9Mt in 2030[13], far higher than the 43.5Mt which the DfT is forecasting.

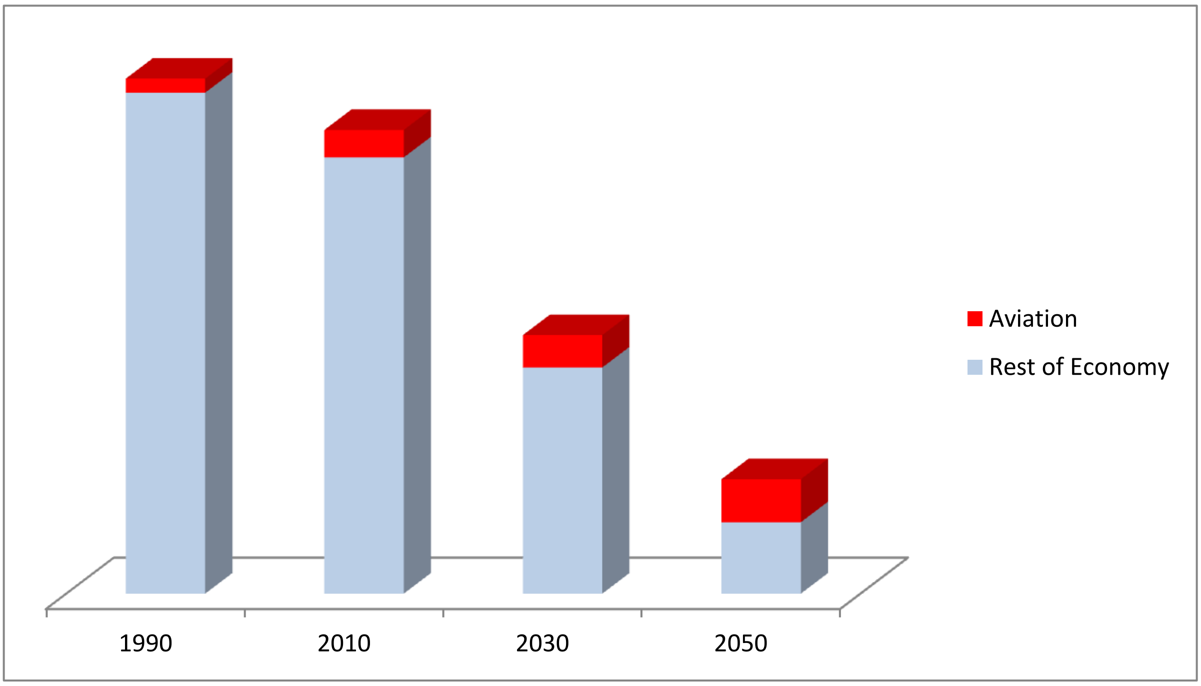
2.6 The economy-wide target to reduce CO_2 emissions by 80% by 2050 would result in a UK budget of about 123 $MtCO_2$ in 2050, compared to actual emissions of 616 $MtCO_2$ in 1990. The DfT projects that aviation CO_2 emissions will be 47.0 $MtCO_2$ in 2050 and, if that were to be the case, it would represent 38% of the total budget and would mean that all other sectors would need to cut their CO_2 emissions by 87% by 2050 compared to 1990 levels (from 599.3 Mt in

[8] The Rt Hon Geoffrey Hoon MP, Hansard, 28 Jan 2009, Col 311.
[9] *'Meeting the UK aviation target – options for reducing emissions to 2050'*, CCC, Dec 2009, p41.
[10] Ibid, Executive Summary.
[11] *'Sustainable Aviation Progress Report 09'*, Sustainable Aviation, Mar 2009, p4.
[12] *'UK Aviation Forecasts',* DfT, Jan 2013, Ch5.
[13] Between 1990-2010, ATMs grew by 41% and emissions by 96%. If between 2010-2030 ATMs grow by 37% (as projected by the DfT), the same proportionality would result in an 86% increase in emissions *vs* 2010, i.e. 61.9Mt.

1990 to 76.3 Mt in 2050[14]). However, the DfT has, in our view, underestimated the growth in aviation CO_2 emissions to 2030 and that they could rise to 61.9 Mt rather than the 43.5 Mt the DfT is forecasting. If aviation emissions then stabilised to 2050, this would represent half the UK budget for 2050 and it would mean that all other sectors would need to make even deeper cuts in their CO_2 emissions.

2.7 It would clearly be wrong to consider the potential economic and financial benefits of more generous treatment for UK aviation without also considering the potential adverse consequences for UK manufacturing and other sectors of the UK economy.

Figure 2 - CO_2 projections to 2050



Based on the DfT's projection of aviation emissions of 47.0 $MtCO_2$ in 2050.

2.8 We note the reference to 'emissions leakage' in the Commission's discussion paper (para 5.1) where it is argued that capacity constraints at UK airports may cause flights and their associated emissions to be displaced to overseas airports.

2.9 In the first instance, as we explained in our submission on *'Aviation Demand Forecasting',* we would not expect to see capacity constraints at UK airports in the period to 2030 and a 15-year forward planning period is adequate for the purpose of reviewing the UK's airport capacity. Moreover, because of the major uncertainties associated with the demand for air travel, we do not believe that a sufficient level of confidence - for planning and policy purposes - can be attached to aviation demand forecasts more than 15-20 years ahead.

2.10 Nevertheless, we are familiar with the leakage argument and we wish to comment upon it. It is an issue which is sometimes also cited in relation to the manufacturing sector, where it is argued that energy-intensive industries such as aluminium and steel production and the manufacture of cement may at some stage find that high carbon costs make it uncompetitive to continue to manufacture in the UK, or indeed in the EU, and so force them to relocate outside the UK/EU.

[14] 599.3 $MtCO_2$ = 1990 UK emissions including international shipping but excluding both domestic and international aviation - as shown in Annex A; 76.3 $MtCO_2$ = 123.3 $MtCO_2$ (the UK budget in 2050 consistent with achieving an 80% reduction in CO_2 emissions *vs* 1990) minus 47.0 $MtCO_2$ for aviation.

2.11 A great deal of EU manufacturing has already moved overseas - predominantly to Asia - in the past two decades and the emissions leakage involved here is on a far greater scale than anything that might happen in the aviation sector. Moreover, if there were to be leakage of UK aviation emissions, much of this would stem from the 'repatriation' of EU transfer passengers who may have used Heathrow if capacity had been available. And finally, on this point, it would be wrong to assume that emissions leakage would only flow in one direction. Action to control aviation emissions in other EU member states could result in emissions leakage *to* the UK.

2.12 Summing up our response to Q2, we consider the analysis in the Commission's discussion paper to be over-reliant on unrealistically optimistic projections for CO_2 emissions in 2030 (and even more so in relation to 2050). As shown in our *'Aviation Demand Forecasting'* paper, the UK has at least twice and probably three times the airport capacity it needs to accommodate the central DfT passenger demand forecast for 2030 and so there is no need for additional capacity, including in the South East, even if airports in the South East continue to cater for over 60% of UK demand. Moreover, if additional airport capacity were to be provided, there is a real danger that this would send a signal, internationally, that the UK had decided to abandon its efforts to help tackle climate change.

Q3: How could the analysis be strengthened, for example to allow for the effects of non-CO_2 emissions?

3.1 Our responses to Q1 and Q2 above include a number of suggestions for strengthening the Commission's analysis. In particular, we have explained why the Commission should be very cautious about accepting optimistic long term projections for aviation's CO_2 emissions. We do not consider that these provide a reliable basis for making policy recommendations, particularly when they seem to be based more on wishful speculation than on the evidence.

3.2 Regarding aviation's non-CO_2 emissions, there is little scientific doubt that these contribute significantly to climate change. It is estimated that, if non-CO_2 emissions and aviation-induced cirrus cloud effects are taken into account, aviation was responsible for 4.9% of global anthropogenic warming in 2005.[15] There continues to be scientific uncertainty about the extent of the warming impact of the non-CO_2 emissions. Estimates of the combined CO_2 and non-CO_2 effects of aviation emissions have ranged from 1.9 times to 4.0 times the impact of the CO_2 emissions alone, before taking account of aviation-induced cirrus cloud effects.[16] Estimation is made more complicated because non-CO_2 emissions generally have only short-lived effects, measured in days or even hours, whereas CO_2 emissions have a long term effect - a hundred years or more.

3.3 Notwithstanding the difficulties associated with assessing the precise scale of the impact of aviation's non-CO_2 emissions it would be wrong to ignore them altogether when considering aviation policy options, which is the position that the DfT has adopted. This, in effect, is making a judgement that their contribution to climate change is zero.

3.4 We would draw an analogy. If we became aware that a hostile country had developed a new weapon but we were not entirely sure just how potent it was, would the Ministry of Defence just ignore this potential threat in its strategic planning?

3.5 In relation to aviation's non-CO_2 emissions the CCC noted:

> *'The precise scale of the additional impact is unclear and there are considerable scientific uncertainties still to be resolved, but it is highly likely that these non-CO_2 effects are significant. It will therefore be important that they are accounted for in future international policy frameworks and in the overall UK policy framework for emissions reduction.'* [17]

[15] *'Transport Impacts on Atmosphere and Climate: Aviation'*, Lee et al, Atmospheric Environment, Jun 2009, doi: 10.1016/j.atmosenv.2009.06.005.
[16] The DfT used a multiplier of 1.9 to allow for aviation's non-CO_2 emissions in its 2007 paper on *'Emissions Cost Assessment'* whereas the landmark *'Aviation and the Global Atmosphere'* report published by the Intergovernmental Panel on Climate Change ('IPCC') in 1999 suggested a 'multiplier' range of 2.0 to 4.0 and a mid-point of 2.7.
[17] *'Meeting the UK aviation target – options for reducing emissions to 2050'*, CCC, Dec 2009, p41.

3.6 We would urge that, not just on the precautionary principle but as a matter of common sense, regard should be paid to aviation's non-CO_2 emissions. We trust that, as a body which prides itself on its independence, the Commission will reach its own conclusion on this matter rather than simply adopt the same position as the DfT. We would suggest that the Commission assumes the forcing impact of aviation's non-CO_2 emissions to be at least equivalent to the forcing impact of its CO_2 emissions, i.e. implying a multiplier of at least 2.

3.7 Finally, in response to Q3, we would remind the Commission that non-CO_2 emissions are not included in the EU ETS, only CO_2 emissions being covered. Also, aviation is not held to account for emissions from biofuels since it is assumed that their CO_2 emissions are cancelled out by the CO_2 absorption that takes place during their production. However, like conventional aircraft fuels, biofuels also give rise to non-CO_2 emissions.

Q4: How can we best deal with uncertainty around demand and emissions, including in relation to future carbon prices?

4.1 Our submission on *Aviation Demand Forecasting* made a number of points about dealing with uncertainty in relation to forecasting the future demand for air travel. It is not necessary to repeat these points here.

4.2 With regard to risk and uncertainty relating to both demand and emissions, we explained earlier why aviation's non-CO_2 emissions should not be ignored and why the Commission should focus on the period to 2030. It would in our view be imprudent for the Commission to attach any significant credibility to the aviation industry's *'Sustainable Road-Map'* to 2050[18], however well intentioned that might be. Its assessments of the potential for biofuels penetration and future fuel efficiency gains are far more optimistic than the assessments carried out by the CCC and the back-loading of its projected improvements to the period beyond 2035 requires a leap of faith.

4.3 When the anticipated changes in the global climate become more apparent and problematic there will be a greater sense of urgency to take decisive action to reduce emissions. This will present particular problems for the aviation industry because of its dependence upon fossil fuels and because aircraft have a comparatively long service life. The Commission's *Climate Change* discussion paper (para 4.4) puts this at an average of 22 years which means that about half the aircraft coming into service today are likely to still be in service in 2035.

4.4 We referred earlier to the precautionary principle and we believe it is worth reminding the Commission that this is enshrined in the EU Treaty of Amsterdam, 1997, which states:

> *'Community policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Community. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.'* [19]

4.5 It is hard to imagine a clearer example of where the precautionary principle should apply than in relation to dealing with the problem of climate change, described by the Government's former Chief Scientific Adviser, Sir David King, as *'the most severe problem we are facing today, more serious even than the threat of terrorism'.*[20]

4.6 The precautionary principle also requires that account should be taken of all greenhouse gas ('GHG') emissions and not only CO_2 emissions. It is illogical for the DfT to disregard aviation's non-CO_2 emissions simply because their impact cannot yet be precisely assessed and this approach is contrary to the precautionary principle.

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[18] *'Sustainable Aviation CO_2 Road-Map'*, Sustainable Aviation, Mar 2012 - see http://www.sustainableaviation.co.uk/wp-content/uploads/SA-CO2-Road-Map-full-report-280212.pdf.

[19] The Treaty of Amsterdam 1997 amends the Treaty of the European Union and came into force on 1 May 1999.

[20] Article by Sir David King in *Science* Magazine, Jan 2004.

4.7 Far from adopting the precautionary principle, the DfT has made optimistic assumptions in its aviation CO_2 forecasts. As we explained in para 2.5 above, if the 1990-2010 relationship between ATM growth and CO_2 emissions were to be repeated in the period 2010-2030, aviation CO_2 emissions would rise to 61.9 Mt in 2030, compared to the DfT's forecast of 43.5 Mt.

4.8 The DfT's forecasts for aviation CO_2 emissions appear to be even more optimistic for the period beyond 2030, where it assumes that:

> *"After 2030, the growth in aviation CO2 emissions is forecast to slow as the effects of market maturity and airport capacity constraints cause the growth of activity at UK airports to slow. At the same time fuel efficiency gains continue with aircraft design improvement and the carbon intensity of emissions reducing with the introduction of biofuel. By 2040, the balance of these effects causes emissions to stabilise, before starting to fall by 2050."*

4.9 There are obvious risks in formulating any policy based on the promise of 'jam tomorrow' or rather, as in this case, jam in 37 years' time. The Commission needs to consider whether, on such an important issue as tackling climate change, it would be appropriate to rely on the DfT's highly speculative and optimistic forecasts for UK CO_2 aviation emissions.

4.10 In a 2009 report[21] the CCC presented three scenarios ('likely', 'optimistic' and 'speculative') which projected aviation emissions to 2050 under different sets of assumptions covering fuel efficiency gains, the uptake of biofuels and behavioural change (including videoconferencing and mode switching to high speed rail). The assumptions used in the 'likely' scenario included an annual fuel efficiency gain of 0.8% and 10% biofuels penetration by 2050 and on this basis the CCC estimated that an increase in passengers of around 60% on 2005 levels by 2050 could be compatible with aviation emissions returning to 2005 levels by 2050.

4.11 The DfT's latest (January 2013) forecasts predict a 93% growth in passenger numbers by 2050 compared to 2005. This is clearly not compatible with stabilising UK aviation emissions at the 2005 level. Stabilisation can only be achieved if the annual growth in aviation is limited to its overall annual level of efficiency improvement, i.e. combining fuel efficiency gains, air traffic management gains, the impact of biofuels, improved load factors and other operational gains. Overall these improvements may be expected to add up to about 1% per annum,[22] thereby allowing that level of aviation growth in terms of passengers carried.

4.12 The economic cost of being wrong as a result of erring on the side of caution in relation to aviation climate change policy will be very much less than the economic cost of failing to have sufficient regard for the sector's ongoing and cumulative warming impacts. This is very similar to the key message of the Stern report, i.e. that the economic cost of inaction in relation to climate change would far exceed the economic cost of action to combat climate change.[23]

4.13 As a guide to policymakers, Stern estimated that the social cost of carbon was *'of the order of \$85 per tonne of CO_2 if we remain on a BAU trajectory'* (at year 2000 prices)[24]. This equates to about £63 per tonne of CO_2 today[25] which puts a cost on today's UK aviation CO_2 emissions of about £2.2bn per annum[26] (and this is before taking account of the cost of aviation's non-CO_2 emissions).

4.14 With regard to future carbon prices, our view is that, in the period to 2030, there is little prospect of carbon prices, as determined by the EU ETS, having any real impact on containing aviation CO_2 emissions or on the demand for air travel, the cost of air travel or airline profitability.

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21 *'Meeting the UK aviation target – options for reducing emissions to 2050'*, CCC, Dec 2009, p22-26.
22 The CCC figure of a 60% increase over the period 2005-2050, equates to an average annual increase of 1.05%.
23 *'The Stern Review on the Economics of Climate Change',* Oct 2006.
24 Ibid, Executive Summary, p.xvi and Part III, p.304, Box 13.3. ('BAU' = 'Business as Usual', which, until such time as a comprehensive international agreement is reached to tackle climate change, should be taken as the likely trajectory for the foreseeable future.)
25 Applying the increase in US CPI and US\$/£ conversion results in a social cost of carbon of about £63/tonne CO_2 at today's prices.
26 Latest data available is for 2011, https://www.gov.uk/government/publications/final-uk-emissions-estimates when UK aviation CO_2 emissions were estimated at 34.6 Mt (1.7m domestic and 32.9m international) @ £63/t = £2.2bn.

In short, we do not expect the EU ETS to have any meaningful impact and we note that the CCC's assessment of the EU ETS concluded:

> *'We cannot therefore be confident that the EU ETS will deliver the required low carbon investments for decarbonisation of the traded sector through the 2020s. Given this risk, the Committee recommends that a range of options such as regulation and taxes for intervention in carbon and electricity markets should be seriously considered'.*

Q5: What conclusions should be drawn from the analysis of effectiveness, and relative cost, of airport capacity and other abatement measures in Chapter 5? Are there alternative analytical approaches that could be used to understand these issues?

5.1 The abatement measures presented as the most cost effective or as capable of producing the largest savings are also the most speculative.

5.2 The targets for reducing aircraft emissions declared by Sustainable Aviation in the UK and by ICAO and IATA internationally are, of course, welcome but these are purely aspirational and not binding commitments. The track record of these organisations in this area does not lead one to expect a great deal in terms of positive achievement.

5.3 The mandatory use of biofuels scores well in the Marginal Abatement Cost ('MAC') analysis but the concerns about substantially increasing the use of biofuels are well known and multi-faceted, including land use, sustainability, availability, competition with land transport, production cost and efficiency (particularly when converted to liquid fuel), and the fact that biofuels still emit GHGs other than CO_2.

5.4 The option of constraining airport capacity may be more effective than most other measures considered but, of course, it would only be effective if demand exceeded capacity. We do not expect that situation to arise in the period to 2030. In addition, there are other options available to the Government to manage the demand for air travel. For example, the Government could use fiscal measures, such as substantially increasing APD (to offset the value of the tax benefits enjoyed by the industry as a result of its exemptions from fuel duty and VAT). A substantial increase in aviation taxes would also be consistent with the 'polluter should pay' principle set down in the EU Treaty of Amsterdam.

5.5 As a further demand management measure, the Government could use differential rates of APD to shift demand away from congested airports to airports where the Government wanted to see greater utilisation. This could be implemented on a revenue neutral basis, resulting in no additional net cost to the aviation industry, and the scale of differentiation could be modified to ensure effectiveness.

Q6: Are there examples of how other countries have considered carbon issues in relation to airport capacity planning that we should be looking at? (Please specify and briefly explain why.)

6.1 Two examples of current international practice may be relevant:

- Tokyo's Haneda Airport averages over 200 passengers per flight despite its focus on domestic and short haul traffic. Both JAL and ANA use short haul versions of the Boeing 747 with 569 seats on domestic routes. Like the UK, Japan is an island trading nation but it has twice our population and twice our GDP and it has significantly fewer commercial runways than the UK.
- New Zealand has included aviation in its ETS but this has, so far, proved ineffective because of the generous allowances made to industries at the outset.

6.2 The Commission should not ignore the experience, closer to home, with the EU ETS, where the inclusion of aviation has, so far, proved ineffective and is currently only applicable to intra-EU flights. Whether it will ever become applicable to all flights to/from the EU is not known at this stage but the aviation industry has in the past shown itself to have a powerful lobbying machine and so the omens are not good. In any event, generous allocations of carbon permits and the methods for offsetting allowed under the EU ETS have meant that the price of carbon (currently about €5/tonne) has stayed extremely low and the system has done little to reduce emissions.

Q7: What do you consider to be the main climate risks and adaptation challenges that the Commission will need to consider (a) in making its assessment of the UK's overall aviation capacity and connectivity needs, and (b) in considering site-specific options to meet those needs?

7.1 The scientific evidence and recent history of climate change tells us that significant changes tend to happen suddenly and unpredictably rather than in an ordered gradual manner.

7.2 In our view the focus should be almost entirely on preventative action, i.e. reducing GHG emissions, rather than on adaptation measures or remedial action. It would surely be perverse to congratulate oneself a generation from now for having had the foresight to build an estuary airport on an artificial island platform towering above the surface of the sea and so unaffected by rising sea levels and other damaging consequences of climate change if the need for such a defensive structure had been created in no small part by the very industry that had built it.

Q8: Are there any opportunities arising from anticipated changes in the global climate that should be taken into account when planning future airport capacity?

8.1 No comment.

Stop Stansted Expansion
May 2013

Annex A

UK air passengers, aviation CO_2 emissions and ATMs: 1990-2030

	1990	*2010*	*2030*	*2010 vs 1990 % Change*	*2030 vs 2010 % Change*
Domestic passengers (m)	24.2	27.2	41.0		
International passengers (m)	77.5	183.4	271.6		
Total passengers (m)	**101.7**	**210.6**	**312.6**	**107.2%**	**48.4%**
Domestic ATMs ('000)	600.0	550.0	695		
International ATMs ('000)	815.5	1,446.0	2,029		
Total ATMs ('000)	**1,415.5**	**1,996.0**	**2,724**	**41.0%**	**36.5%**
UK domestic CO_2 emissions (Mt)*	592.0	497.8	237.1†		
Domestic aviation (included above)	1.4	1.8	*N/A*		
International aviation	15.6	31.5	*N/A*		
Total dom+internat'l aviation CO_2	**17.0**	**33.3**	**43.5**	**96.5%**	**30.6%**
International shipping	8.7	8.5	9.0		
Total	**616.3**	**537.9**	**287.6**		
Aviation CO_2 % of total CO_2	**2.8%**	**6.2%**	**15.1%**		

Notes:

** Includes domestic aviation but excludes international aviation and international shipping.*

† Estimate based on the DfT's Jan 2013 aviation CO_2 forecasts for 2030 and estimated total UK CO_2 emissions in 2030, based on a trajectory which reduces total UK CO_2 emissions by 80% by 2050 compared to 1990.

Sources

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