IATA Submission to the Airports Commission's discussion paper 03 on aviation and climate change

Do you consider that the DfT CO2 forecasts present a credible picture of future UK aviation emissions? If not, why not?

- The revision in the DfT forecasts from 2011 to 2013 gives a good example of the difficulties in forecasting aviation activity and associated emissions over a long time horizon.
- IATA thinks it is important for governments in collaboration with industry to work towards higher rates of deployment of sustainable aviation biofuels. A central scenario that reaches only 2.5% of total aviation fuel use by 2050 is an overly pessimistic outlook. At least two other scenarios should be considered by the commission. One of the scenarios that should be included is the CCC 2009 central scenario of biofuel penetration rates by 2050 of 10% and combine it with higher scope of lifecycle GHG saving relative to kerosene of 20% (rather the currently used 50%). We also suggest adding the scenarios developed by E4tech for their August 2009 report to the CCC[1], which include higher uptake of biofuels. A robust biofuel policy should ensure not only increase in the availability of biofuels but also should improve their sustainability, particularly performance in terms of generating reduction of lifecycle GHG savings.
- We are skeptical about claims being made related to behavioral change. Greater global ICT interconnectivity may lead to behavioral change that further stimulates demand rather than serves as a substitute for air travel. Similarly we question the viability of potential "promotion" of behavioral change aimed at leisure markets. Given the uncertainties associated with such behavioral shifts, particularly when considering long time horizons, we propose to either strip out behavioral impacts entirely from the assessment or alternatively build-in the equal scale possibility of their being positive (generating higher demand) impact on air transport from behavioral changes.

1 http://downloads.theccc.org.uk/Aviation%20Report%2009/E4tech%20(2009),%20Review%20of%20the%20potential%20for%20biofuels%20in%20aviation.pdf

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?

Airport constraints are not a cost-effective abatement lever for the foreseeable future

- Having adequate airport capacity can reduce climate impacts by ensuring efficient operations and avoiding emissions leakage.
- The consultation document draws on a technical report by the DfT and the *MACC Model for the UK Aviation Sector*, which evaluates constraining airport capacity as an abatement lever. Our two main concerns with the evidence cited on airport capacity constraints as an abatement lever relate to overstating the abatement potential while underestimating the associated costs.
- Abatement potential is overstated due to the following:
  - Emissions leakage and associated impacts are not taken into account. If the effect of a UK policy measure is to displace greenhouse gas emissions elsewhere, it is incorrect to claim that the UK policy measure results in an emission saving. Furthermore, all impacts of increased capacity constraints should be included, e.g. increased holding times prior to landing. The report notes that aircraft circling in the arrival holds before landing accounted for around 2% of all the CO2 in NATS controlled airspace in 2006. These 2%, which are predominantly the result of airport capacity constraints, represent 526,000 t CO2 or the equivalent of 3552 transatlantic flights between LHR and JFK[2].
- Associated costs are underestimated due to the following:
  - Not sufficiently taking into account loss in connectivity for the UK which would result in the UK foregoing benefits. For example, lower economies of agglomeration around airports and less dynamic service for just in time production facilities[3].
  - The estimation of abatement builds in behavioral measure such as video conferencing and preferences for closer travel destinations that contribute to a reduction in air transport demand. These are not proven trends and if not true would understate the loss in consumer benefits from airport capacity constraints.
  - Not taking into account the impact from diversion of spending by leisure or business passengers away from the UK. The report also mentions supposed benefits to the UK economy from keeping

[2] A flight between LHR and JFK consumes an average of 47,382 kg of fuel (http://www2.icao.int/en/carbonoffset/Pages/default.aspx).
[3] The Erdington Transport Study 2006

spending of UK residents within the economy. This however, does not account for loss of consumer surplus due to constraints on travel.
    - Foregone benefits from inadequate capacity to meet existing demand at already constrained airports. [4]
- Even if the MACC study is used as the basis for assessing cost effectiveness of airport constraints as an abatement leaver, although as mentioned above we think it underestimates this cost, we would propose that it is more appropriate to use the cost-effectiveness figure for the central mid scenario as that was the scenario that was suggested to be the most likely by this study. That would imply that the cost effectiveness of capacity constraints as an abatement lever would be 79 GBP per tCO2 (as opposed to 61 GBP per tCO2 referenced in the consultation document).
- Using the UK TAG Unit 3.3.5 the Greenhouse Gases Sub-Objective5 as a guide on future carbon prices, we can tell that the constraining airport capacity would not be an appropriate leaver to pursue for some time to come. Given that recent carbon prices within the EU ETS are around 3 GBP per tCO2, or roughly a one third of the low scenario identified for 2013 in Table 2a TAG Unit 3.3.5 it is reasonable to consider the low carbon price scenario as the basis of assessment. The low carbon price scenario indicates that the cost per tCO2 would reach 79 GBP in 2043. This would suggest that airport capacity as an abatement lever would not be cost effective before then. The point of breakeven would be reached even later, given that the capacity constraint cost, for reasons explained above, is an underestimate.

Constraining airport capacity will result in emissions leakage and/or higher abatement costs

- As pointed out leakage may take place due to diversion of travel through sub-optimal routings (via the same mode, other less CO2 efficient modes or sub optimal timing of trips), diversion of travel to other destinations that result in net CO2 emissions, and operational inefficiency.
- The consultation document claims in paragraph 5.5 that all diversions would take place within the coverage of the EU ETS (or equivalent scheme), therefore displacement to other European countries by the UK aviation sector would all fall within the overall ETS cap. This may not necessarily be true as not all displacement will take place within an ETS cap. Even if we assume

[4] A report by Frontier Economics that quantifies some of the foregone benefits from existing capacity constraints at Heathrow http://hub.heathrowairport.com/files/One-hub-or-none-Frontier-Economics-bulletin.pdf

[5] http://www.dft.gov.uk/webtag/documents/expert/pdf/U3_3_5-ghg-120723.pdf

this to be true, i.e. displacement occurs with the same cap, there would still be an impact due to the inefficiency caused by diversions. The increased inefficiencies, as explained above, would require more abatement efforts leading to higher abatement costs overall.

- The discussion paper distinguishes between several categories of journeys, for which it draws specific conclusions. Some of these conclusions are however questionable:
  - Direct point-to-point trips to or from UK airports: the discussion paper assumes that these trips cannot by definition be displaced elsewhere. However, a few lines below, the paper contradicts itself by forecasting an increase in trips to or from the UK that now connect via an overseas hub. The paper also ignores the emissions associated with the resulting shift to other transport modes, in particular road transport.
  - Domestic end-to-end trips: the paper ignores the emissions associated with the resulting shift to other transport modes, in particular road transport.
- The analysis also seems to consider only passenger traffic and ignore the impact on freight transport.

How could the analysis be strengthened, for example to allow for the effects of non-CO2 emissions?

- The discussion paper rightly notes that there is a lot of uncertainty around the climate effects of water vapour, sulphates, soot, linear contrails and aircraft induced cirrus. As regards the effects of NOx emissions, the magnitude of their effect is also subject to uncertainty.
- Only a better understanding of the effects of non-CO2 emissions can allow the analysis to be strengthened.

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

- Forecasts inherently have uncertainty embedded in them. Nils Bohr put it simply that “predicting is very difficult, especially if it’s about the future.” Forecasting different scenario can help identify a range of potential outcomes that can facilitate planning. Airport infrastructure planning is particularly difficult in terms of timing given lumpy characteristics in creating step changes in relation to supply and demand. In the case of South Eastern UK there are already capacity constraints and all of the forecasted range options, including those identified in the latest DfT forecast, suggest a need for urgent action to ensure that UK’s capacity as a connection node and the benefits it gains from

that are not eroded. A concern to the UK economy would be that the lack of airport capacity could divert air transport links, along with associated benefits, to locations outside the UK not only for the short term but even in the longer term. It may be that once established elsewhere, air links will not return to the UK even if capacity is added. The precautionary principle would lead one to conclude that it would be better to develop capacity to avoid eroding the benefits associated with UK connectivity.

- Uncertainty related to carbon prices would suggest that the price estimates presented in the UK TAG Unit 3.3.5 the Greenhouse Gases Sub-Objective may be subject to further downward pressure. Abatement cost forecast for greenhouse gases and other industrial gases have historically tended to overestimate the cost associated with achieving abatement largely due to the difficulty in incorporating technological innovation in long term forecasting. However, a driving factor of downward pressure on carbon prices is that global abatement has underperformed compared to earlier set expectations. Pledges put forward by governments in acceding to the Copenhagen Accord and subsequent communications on their abatement intentions suggest that mitigation efforts will lag behind till 2020. The likely impact of that would leave greater abatement levers at lower costs available in post 2020 time frame.

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?

- The analysis presented in Chapter 5 and in the MACC study contains many weaknesses which may lead to inappropriate conclusions:
  - Regulatory CO2 standards: the MACC study assumes that this policy would be expensive due to the "required level of fleet replacement". The assumption that the adoption of a CO2 standard would lead to the replacement of existing fleet is however questionable; it is indeed highly uncertain that a new ICAO standard would apply to in-service aircraft. Furthermore, if the UK were to impose a different standard than the ICAO one, this would be in clear breach of the Chicago Convention on International Civil Aviation.
  - Early fleet retirement: in addition to the cost-ineffectiveness of such a policy, a mandatory phase-out of aircraft may be incompatible with the international obligations of the UK, notably under the Chicago Convention for International Civil Aviation, as it would prohibit the operation of aircraft meeting all applicable ICAO certification standards.

- Capacity constraints: among others, the CO2 abatement estimate does not include emissions leakage nor additional emissions resulting from increased holding times. Moreover, the cost estimate does not take into account losses to the UK economy. In the UK only, air transport supports 1,400,000 jobs and EUR78.9 billions in GDP (5% of the economy). Including the impact on the economy may therefore significantly change the cost-effectiveness of using capacity constraints as a policy measure to tackle climate change.
- Reducing inefficiencies in air carrier operations: the cost of fuel alone creates a very strong incentive for air carriers to reduce inefficiencies in their operations. The assertion in the MACC study (p. 57) according to which one particular aspect of excess fuel usage arises from poor matching of aircraft types to missions flown and that aircraft routinely travel with excess equipment on board is speculative and fails to take into account that airlines are already under extreme pressure to optimize their operations, in particular at congested airports such as Heathrow. Furthermore, the proposal to use the slot allocation system to exclude aircraft which would not meet specified target levels of fuel burn would not only be distortive between business models but also contrary with the international agreements to which the UK is party. Regional and premium airlines may risk losing slots and airlines could be prohibited to exercise their traffic rights even though their fleet is composed of aircraft certified in accordance with all applicable international standards.
- Mandatory biofuels uptake: the cost-effectiveness analysis should also take into account the impact of higher (bio)fuel prices on the competitiveness of UK air travel and the consequential potential loss of business for UK companies.
- Voluntary reduction of demand for air travel ("behavioural change"): table 5.2 in the discussion paper seems to indicate that the so-called behavioural change would be a cost-effective measure to reduce emissions. This however contradicts the commentary provided in the MACC study (p. 72) which concludes that in supply constrained markets (which is undoubtedly the case of London airports), this measure has the effect of increasing CO2 emissions as market lower pressure of demand reduces fares and consequently attracts leisure passengers which were previously displaced by supply constraints. It also appears from Table 26 in the MACC study that the estimated cost of forcing a reduction of demand for air travel does not include any losses of revenues for airports and air carriers.
- In short, before any conclusion can be drawn from such the cost-effectiveness analysis, the shortcomings mentioned above should be addressed. In particular, all costs should be included, in particular losses to the UK economy and aircraft operators as a result of lower demand for air transport. All environmental impacts resulting from policy measures should also be duly

evaluated, including the additional emissions from other transport modes as a result of a modal shift.

- Furthermore, only measures which are compatible with the international obligations of the UK should be considered. Any measure which prohibits access to UK airports to any aircraft categories that meet all applicable international standards should be excluded.
- Measures should also not interfere with market dynamics by favoring certain business models through distortive slot allocation processes or the manipulation of demand for air transport services.
- Overall, the proposal to use constraints on airport capacity as a solution to climate change should be strongly dismissed. Using capacity constraints to address climate change will have a negative impact on the UK economy and is likely to increase emissions elsewhere.
- A more appropriate way forward for the UK Government is to strengthen its support for, among others the deployment of sustainable fuels and improved infrastructure.
- The comprehensive strategy adopted by the industry to address its impact on climate change should be preferred. It consists in:
  - improved technology, including the deployment of sustainable low-carbon fuels;
  - more efficient aircraft operations;
  - infrastructure improvements, including modernized air traffic management systems;
  - market-based measures, to fill the remaining emissions gap.

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.)

No response.

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?

No response.

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

No response.