Opinion of the European Economic and Social Committee on the Reduction of CO₂ emissions from airports through new airport management (Exploratory opinion)

(2008/C 204/10)

In a letter dated 4 July 2007, the Portuguese Ministry of Transport, in the context of the Portuguese EU Presidency, asked the EESC, under Article 262 of the Treaty establishing the European Community, to draw up an exploratory opinion on:

Reduction of CO₂ emissions from airports through new airport management.

The Section for Transport, Energy, Infrastructure and the Information Society, which was responsible for preparing the Committee's work on the subject, adopted its opinion on 19 February 2008. The rapporteur was Mr McDONOGH.

At its 443rd plenary session, held on 12 and 13 March 2008 (meeting of 13 March 2008), the European Economic and Social Committee adopted the following opinion by 103 votes with 5 abstentions.

1. Recommendations

— Encourage airports to adopt management strategies for the reduction of airport carbon dioxide emissions through the introduction of an air quality model where all sources of NOx are identified and targets for CO₂ reduction are established. This model should be calibrated against on site air quality monitoring points. Key areas to be included in the model are airfield, airport buildings (terminal and associated service facilities), car parks and surface access.

— The adoption of recognised building standards and international best practice associated with the building and operation of airport infrastructure should be encouraged to minimise the associated carbon footprint. Key examples are insulation, maximising use of natural light and solar gain, rainwater harvesting, solar energy, combined heat and power units (CCHP), intelligent building management systems and heat exchangers.

— Encourage airports to use energy sources, which have been generated from renewable resources.

— Encourage the use of environmentally friendly airport service vehicles at airports where there are large concentrations of service vehicle activity associated with aircraft turn-arounds. Airports could also encourage the use of environmentally friendly vehicle use by passengers through the use of differential parking charges and preferential parking locations.

— Encourage airports to minimise waste generation at airports through the provision of enhanced airport recycling facilities. The identification of waste generated per passenger as a key environmental indicator would be beneficial.

— Minimise the impacts associated with car travel to airports through the provision of sustainable transport alternatives for passengers and staff alike, examples would include train links, bus links, car sharing and cycling initiatives.

— Encourage airports where possible to improve air traffic management procedures at and in the vicinity of the airport to reduce aircraft fuel burn.

— Auxiliary engines where possible should not be left running on the ground. Fixed ground power and pre-conditioned air should be made available from the terminal building.

— Discourage or ban use of older engine aircraft, which are inefficient in fuel, by increasing landing and take off fees appropriate to those aircraft, through differential charges.

— Continuous Descent Approach (CDA) through which aircraft begin a constant descent at a higher altitude, moving groundward steadily, as opposed to a staggered approach that requires the aircraft to fly level for longer periods and thereby requires greater thrust to maintain constant speed and consequently burns more fuel. This continuous descent means that aircraft descend at a more efficient speed, therefore reducing fuel burn. The impact of this approach on air quality is likely to be within 15 to 20 miles of the airfield.

— Turbo propeller planes to be used on all journeys less than 500 km and where routes support less than 70 passengers per sector and range permits.

— Reducing fuel consumption by switching off 1-2 engines when taxing to and from the runway.
2. Introduction

2.1 Aviations is a significant contributor to greenhouse gas emissions. Emissions currently account for about 3% (1) of total EU greenhouse gas emissions, and have increased by 87% since 1990. The rapid growth in aviation emissions contrasts with the success of many other sectors of the economy in reducing emissions. Without action, the growth in emissions from flights from EU airports will by 2012 cancel out more than a quarter of the 8% emission reduction the EU-15 must achieve to reach its Kyoto Protocol target. By 2020, aviation emissions are likely to more than double from present levels.

2.2 Aviation刺激s the economy, trade and tourism, generates business opportunities and enhances the potential for improving the quality of life in both developed and developing regions.

2.3 Aviation transports annually 2 billion passengers and 40% of interregional exported goods (by value). 40% of international tourists travel by air. Aviation generates 29 million jobs worldwide. Its global economic impact is estimated at USD 2 960 billion, equivalent to 8% of world GDP.

2.4 The airport should be an integral part of the local infrastructure, and play a leading role in the protection of the environment in the locality.

2.5 The efficiency and utilisation to the maximum of airports infrastructure depends highly on air traffic control. The introduction and focus on efficient air traffic control procedures both at and in the vicinity of the airport can limit the amount of fuel wasted in take-off, landing and taxing at the airport.

2.6 Many airports like Gatwick, Paris Orly, Milan Linate, etc., are already desperately short of capacity. By 2010 another 15 or so European airports will have joined them. Britain’s Civil Aviation Authority, among others, consider that slots should be auctioned to airlines and then traded in a transparent secondary market to encourage better utilisation of a scarce resource.

2.7 More efficient use of the airport infrastructure and its associated ground facilities could be made by using larger aircraft where feasible. Even though many flights are full, the average number of passengers on each aircraft using many airports, is only 68. The aircraft are too small, and there is little incentive for airlines to bring in bigger, more modern aircraft, as the airports cannot be priced to encourage this type of efficiency. A combination of market mechanisms and efficiency rules, such that carriers must use their departure gates at least once an hour depending on the type of aircraft used, or make them available to another carrier should be in place to improve the situation.

2.8 The Commission’s proposal (SESAR) to establish a single open sky for Europe unifying the separate national air traffic control arrangements pertaining at present offers the potential for a major increase in the efficiency of use of air space on the approach and take-off thereby diminishing stacking and holding on the ground i.e. waiting for landing and take-off slots respectively. (IATA, the International Air Transport Association, predicts that 12% of global CO₂ emissions by aircraft could be saved if air traffic control systems were more efficient). The Committee urges all concerned to make rapid progress with the negotiations to establish this new regime, and not to allow it to be held back through delaying tactics by sectional interests.

3. Aviation — A source of noise and emissions

3.1 Aviation’s environmental impact is estimated to contribute about 2% of global greenhouse gas emissions and could double by 2050.

3.2 The aviation industry has surpassed most other industry sectors in reducing noise and emissions per unit of production over the years. Fuel efficiency is currently improving by about 1-2% a year, and emissions account for 2% of total volume. The aviation growth makes 5% a year, while energy efficiency brings savings of less than 1,5%. However, aviation is predicted to grow more quickly than this, so technological improvements by themselves won’t be enough to solve the problem.

4. Noise and air quality around airports

4.1 The aviation industry is committed to implementing the International Civil Aviation Organisation’s (ICAO) balanced approach to noise management, which aims to alleviate community exposure in the most cost-effective way.

4.2 Reduction of noise at source through technological progress is key in this regard, and impressive improvements have been made over the past decades and further progress is targeted for the coming 15 years. The (EC) issued a Directive (4) which established principles for managing aircraft noise and introduced operating restrictions, including provision for the withdrawal of the noisiest Chapter 3 aircraft, at EC airports; the outcome of this directive should now be reviewed.


4.3 Airports and air navigation service providers are committed to implementing the continuous descent approach and other low noise flight procedures wherever appropriate, while safeguarding runway capacity. This has been identified as a key area of improvement for CO₂ emission reductions in and around airports.

4.4 Governments must ensure preventive land-use planning and management measures around airports.

4.5 Local air quality concerns call for comprehensive action targeting all sources of emissions in the air and on the ground, including activities — such as industry and road traffic that are not directly attributable to air transport, but are a by-product of servicing the airport. Linking airports to the train networks should be encouraged thereby establishing environmentally sustainable transport options for getting to the airport, enhanced bus and train networks are a key factor in this regard also. Airports should encourage the use of environmentally friendly cars in their car parks, by differential pricing and preferential parking locations. Airport service vehicles should as a minimum operate on cleaner energy sources like gas and electricity, a number of vehicle types use battery power presently, this should be expanded further where feasible for the specific operational requirement. The transport of staff to and from the airport can be a significant car trip generator, alternative options should be encouraged like staff busses, car sharing, staggered shift patterns avoiding peak times and if feasible, cycling for the airport’s staff.

4.6 Technological progress has practically eliminated visible smoke and hydrocarbons, while oxides of nitrogen from aircraft engines have been progressively reduced by 50 % over the past 15 years. An extra 80 % reduction in nitrogen is targeted by 2020 for new engine technology.

4.7 Fuel-cell systems are under development, which could replace on-board auxiliary power units (APU) and thus reduce emissions by up to 75 % per unit.

4.8 Airports and airlines are committed to using cleaner and more efficient ground service equipment and vehicles, while also pressing governments and local authorities to provide cleaner surface access to airports — like trains or metros.

4.9 Aircraft traditionally run one of their engines while they are parked on the ground to power the plane.

5. **Aviation contribution to climate change**

5.1 Aviation accounts for approx. 2-4 % of European CO₂ emissions from fossil fuel use. This could reach approximately 5 % or more by 2050 according to an Intergovernmental Panel on Climate Change (IPCC) forecast. It is also noted that growth in aviation emissions could by 2012, offset more than a quarter of the EU’s environmental contribution made under the Kyoto Protocol. Reaching international agreement on action is proving difficult but the proposed Directive is intended to provide a model for action at a global level and is the only initiative which offers this possibility.

5.2 80 % of aviation’s greenhouse gas emissions are related to passenger flights exceeding 1 500 km/900 miles for which there is no practical alternative.

5.3 Aviation is committed to actively exploring the progressive introduction of alternative fuels such as biomass to liquid (BTL) to further reduce CO₂ emissions.

5.4 Technological progress, infrastructure improvements and operational good practices at airports are currently considered the most efficient and cost effective means to address climate change concerns, next to appropriate market based measures.

5.5 Airports need international standards and global policies, not piecemeal or short-sighted fixes.

5.6 Airport design could play a positive role in emission reduction, particularly the re-design of taxiways and piers to reduce the amount of congestion on the airfield. The terminal building design should minimise energy requirements as in heat and air conditioning, and consider the use of solar panels where feasible, maximising the use of natural light and solar gain, the use of combined heat and power systems (CCHP) and heat transfer systems, the incorporation of rain water harvesting in to building designs to be used in toilets, aircraft wash, etc. The temperatures in the terminal buildings should be efficiently controlled, to reduce energy wastage in over heating/over cooling.

5.7 Airport operational management should target the reduction of waste generated per passenger throughput, through the use of enhanced recycling initiatives both within the airports direct control and through incorporation into Service Level Agreements with airlines and other key service partners.
5.8 The Directive bringing aviation within the remit of the European Emissions Trading Scheme (ETS) (1) may positively increase public awareness, offer significant new carbon reduction resources and provide a measure for internalising those external environmental costs which hitherto the aviation industry has been able to ignore. Given the level and volatility of carbon prices it is unlikely to have a major impact on the continuing growth of air traffic and emissions.

6. Conclusions — next steps

6.1 Tackling airports environmental impact in a proactive, timely and cost effective manner requires the full co-operation and agreement of international bodies, governments and industry stakeholders.

6.2 Emissions reduction through a systems approach — while preserving safety as the top priority all factors must be considered, including airframe and engine design and operations, trade-offs, alternative fuels, ground services, airport capacity and air traffic management.

6.3 Consolidating long term environmental targets for airports, based on reliable and verifiable data and requirements is an urgent priority. All aspects of the airport process (air traffic, buildings, surface access etc.) should be included in these targets.

6.4 The creation of new airport infrastructure to reduce fuel burn before takeoff and after landing should be a key design parameter for all future airport design. Initiatives like the provision of holding grids at larger airports should be researched further and provided where feasible, to which commercial airplanes would be towed — engines off before takeoff, only to start their engines about 10 minutes before takeoff.

6.5 Continuous descent approach through which aircraft begin descent at a higher altitude, moving groundward steadily, as opposed to a staggered approach that burns excessive fuel. This continuous descent means that aircraft descend at a more efficient speed, therefore reducing fuel burn.


The President
of the European Economic and Social Committee
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