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REPORT

on the communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions - Air Transport and the Environment: Towards meeting the Challenges of Sustainable Development
(COM(1999) 640 – C5-0086/2000 – 2000/2054(COS))

Committee on Regional Policy, Transport and Tourism

Rapporteur: Caroline Lucas

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PROCEDURAL PAGE

By letter of 8 December 1999 the Commission forwarded to Parliament its communication to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions - Air Transport and the Environment: Towards meeting the Challenges of Sustainable Development (COM(1999) 640 – 2000/2054(COS)).

At the sitting of 18 February 2000 the President of Parliament announced that she had referred the communication to the Committee on Regional Policy, Transport and Tourism as the committee responsible and the Committee on the Environment, Public Health and Consumer Policy and the Committee on Industry, External Trade, Research and Energy for their opinions (C5-0086/2000).

The Committee on Regional Policy, Transport and Tourism had appointed Caroline Lucas rapporteur at its meeting of 26 January 2000.

The committee considered the Commission communication and the draft report at its meetings of 19 April 2000 and 21 June 2000.

At the last meeting it adopted the motion for a resolution by 49 votes with 1 abstention.

The following were present for the vote: Konstantinos Hatzidakis chairman; Emmanouil Mastorakis and Helmuth Markov, vice-chairmen; Caroline Lucas, rapporteur; Pedro Aparicio Sánchez (for Danielle Darras), Sir Robert Atkins, Rolf Berend, Theodorus J.J. Bouwman, Philip Charles Bradbourn, Martin Callanan, Carmen Cerdeira Morterero, Luigi Cesaro, Luigi Cocilovo (for Raffaele Fitto), Chris Davies (for Elspeth Attwooll), Francis F.M. Decourrière, Alain Esclopé, Giovanni Claudio Fava, Markus Ferber (for Guido Viceconte), Jacqueline Foster (for Renate Sommer), Mathieu J.H. Grosch, Ewa Hedkvist Petersen, John Hume, Marie Anne Isler Béguin (for Camilo Nogueira Román), Juan de Dios Izquierdo Collado, Georg Jarzembowski, Dieter-Lebrecht Koch, Constanze Angela Krehl (for Demetrio Volcic), Linda McAvan (for Günter Lüttge), Sérgio Marques, Erik Meijer, Reinhold Messner, Rosa Miguélez Ramos, Francesco Musotto, Juan Ojeda Sanz, Karla M.H. Peijs, Wilhelm Ernst Piecyk, Samuli Pohjamo, Alonso José Puerta, Reinhard Rack, Carlos Ripoll i Martínez Bedoya, Marieke Sanders-ten Holte (for Dirk Sterckx), Gilles Savary, Dana Rosemary Scallon, Ingo Schmitt, Margie Sudre, Hannes Swoboda (for Brian Simpson), Maurizio Turco, Joaquim Vairinhos, Ari Vatanen and Mark Francis Watts.

On 24 February 2000 the Committee on Industry, External Trade, Research and Energy and on 23 February 2000 the Committee on the Environment, Public Health and Consumer Policy decided not to deliver opinions.

The report was tabled on 29 June 2000.

The deadline for tabling amendments will be indicated in the draft agenda for the relevant part-session.

MOTION FOR A RESOLUTION

European Parliament resolution on the communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions - Air Transport and the Environment: Towards meeting the Challenges of Sustainable Development (COM(1999) 640 – C5-0086/2000 – 2000/2054(COS))

The European Parliament,

- having regard to the Commission communication on Air Transport and the Environment: Towards meeting the Challenges of Sustainable Development (COM(1999) 640 – C5-0086/2000¹),
- having regard to Article 2 of the EU Treaty, which makes sustainable development an explicit goal of the EU,
- having regard to Article 6 of the EC Treaty, which obliges the Community to integrate environmental concerns into all policy areas,
- having regard to the fact that safety has always been the air transport industry's top priority, which has been an important factor in its success. Safety levels must continue to be protected - whatever environmental strategies are required,
- having regard to the fact that the Amsterdam Treaty clearly states that the principles of sustainable development should be applied to all modes of transport. (Road, Rail and Air),
- having regard to the economic and social importance of the aviation industry in EU Member States in which air transport has brought work, prosperity, increased trade and new travel and tourism opportunities,
- having regard to the fact that the EU should not create unnecessary differences where global standards exist. Where new rules need to be created for example in environmental protection, there must be an international approach for such a universal industry as air transport,
- having regard to the Fifth Environmental Action Programme of the European Union which recommends the use of fiscal instruments for environmental policy in order to ensure that natural resources are used in a responsible manner by consumers and suppliers and its resolution of 17 November 1992²,
- having regard to the the OECD Council of May 1999 where ministers stated that sustainable development requires the integration of economic instruments for

¹ Not yet published in the Official Journal.

² OJ C 337, 21.12.1992, p. 34

environmental protection, namely the internalisation of external costs³,

- having regard to the European Conference of Ministers of Transport (ECMT) which published a comprehensive in depth review of the state of the art of internalisation policies with a range of concrete proposals for the introduction of environmental levies in all transport sectors⁴,
- having regard to the Commission White Paper “Fair payment for infrastructure use: a phased approach to a common transport infrastructure charging framework in the EU” (COM (1998) 466), in which the Commission presented a new framework for infrastructure charging, in which the marginal social costs of transport are taken into account and Parliament's resolution⁵,
- having regard to the final report on “options for charging users directly for transport infrastructure operating costs” issued by the High Level Group on Transport Infrastructure Charging on 9th September 1999,
- having regard to the Cardiff process of environmental integration, started in 1998, during which the internalisation of external costs in the transport sector has been put forward by Ministers on numerous occasions⁶,
- having regard to the IPCC (Intergovernmental Panel on Climate Change) Special report on Aviation and the Global Atmosphere, which recognises that the effects of some types of aircraft emissions are well known, but which also reveals that there are a number of key areas of scientific uncertainty that currently limit the ability to project aviation impacts on climate and ozone,
- having regard to the World Health Organisation Guidelines for Community Noise , adopted March 2000, and the World Health Organisation Charter on Transport, Environment, and Health, June 1999,
- having regard to the fact that the EU is represented through certain of its member states in ICAO and is itself an observer to the ICAO committee on Aviation Environmental Protection (CAEP) where these global environmental standards are developed,
- having regard to its resolutions of 30 March 2000 on hush-kitted aircraft⁷ and of 14 April 2000 on night flights and noise pollution near airports⁸, and of 4 May 2000 on the

³ Press Communique SG/COM/NEWS (99)52 of the OECD on the High Level Meeting of the OECD Council, Paris 26-27 May, 1999

⁴ "Efficient Transport for Europe: Policies for Internalisation of External Costs", ECMT, Paris 1998

⁵ OJ C 219, 30.7.1999, p. 460

⁶ Eg "Follow-up to the conclusions of the European Council of Cardiff: Report to the European Council of Vienna on integrating the environment and sustainable development into the transport policy of the Community", 13811/98, Brussels, 30.11-1.12 1999

⁷ Not yet published in the Official Journal

⁸ Not yet published in the Official Journal

European Airline Industry: from Single Market to World-wide Challenges⁹,

- having regard to Rule 47(1) of its Rules of Procedure,
- having regard to the report of the Committee on Regional Policy, Transport and Tourism (A5-0187/2000),
- A. whereas Principle 16 of the UN Conference on Environment and Development's Rio Declaration calls on member states to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment,
- B. whereas Annex 4.2b of the Convention to Combat Global Warming commits Annex 1 Parties to “adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs”,
- C. whereas the Kyoto Protocol to the UNFCCC in Art. 2.2 requires Annex 1 parties to strive to limit or reduce greenhouse gases from aviation,
- D. whereas at the 32nd ICAO Assembly, at the request of the Member States of the European Union, decisions were taken aimed at continuing and accelerating the work of ICAO in the area of aviation environmental protection,
- E. whereas CAEP formed a specific Working Group to identify and evaluate the potential role of market-based options, including emissions charges, fuel taxes, carbon offset and emissions trading regimes,
- F. whereas ICAO is the specialised agency with global responsibility for the establishment of standards, recommended practices and guidance on various aspects of international civil aviation, including environmental protection and its standards and recommended practices are global in scope, providing benchmarks for both regional and national legislation,
- G. whereas air passenger traffic both within the Community and between the Community and third countries increased by nearly 40% between 1993 and 1997; whereas passenger numbers are expected to double over the next 15 years in the European Union, leading to a negative impact on the environment which must be limited,
- H. whereas ICAO is expected to agree new noise certification standards and associated measures in January 2001 and to establish the global parameters for new market-based options, including emission charges,
- I. whereas other efficient means of surface public transport must be treated as an alternative to air transport over shorter distances,
- J. having regard to the current work of ICAO/CAEP to reduce the impact of aircraft noise

⁹ Not yet published in the Official Journal

and gaseous emissions, and having regard to the 33rd ICAO Assembly to be held in 2001, which will aim to introduce stricter worldwide aircraft noise standards,

- K. hoping that, for this Assembly, in matters of EU competence Member States will give the Commission a clear negotiating mandate which reflects the Treaty obligation to integrate environmental protection requirements into all policies,

General

1. Welcomes this important initiative from the Commission; considers that there has been a major policy gap and so believes that the introduction of appropriate policy measures is urgently needed;
2. Considers it essential that targets are set and dates introduced, in order to enable the aircraft industry, airlines, and users to adapt to legislative measures in good time;
3. Considers that one of the factors which separates air transport from other modes is that it requires common world wide business practices and international regulatory framework;
4. Calls on the Commission to put forward an EU strategy to feed into the ICAO process before the CAEP 5 meeting in January 2001;
5. Welcomes the introduction in May 2000 of the Working Radiation Directive, for airline crew, which is now being implemented by all EU airlines;

Aircraft noise

6. Considers that the Community should support and strengthen the ICAO process of revising noise stringency levels in order to meet as far as possible the particular needs of the densely populated, industrialised EU and to take account of the particular needs of third country airlines from the developing world who operate into the EU. This could include a global system of airport classification agreed under ICAO auspices and therefore calls on the Commission to pursue complementary measures to be implemented if ICAO cannot reach appropriate agreement;
7. Welcomes the approach adopted by the Commission of insisting on transitional rules allowing the noisiest categories of Chapter 3 aircraft to be phased out ;
8. Recommends to set a new and ambitious time frame for phasing out aircraft within a 5d BA margin of the Chapter 3 threshold and other Chapter 3 aircraft as when new standards have been formulated;
9. Recommends that to safeguard the health of citizens living near airports, the EU should develop community wide guideline values taking into account e.g. the WHO guidelines for Community Noise and all sources of environmental noise;
10. Further recommends that the EU adopt Community-wide noise exposure targets that ensure that nobody is exposed to unacceptable noise levels at night. These noise levels

should be based on the WHO Guidelines, and the targets should come into force by 2002;

11. Asks the Commission to create a Community-wide framework in order to provide member states with the necessary guidelines in order to achieve the targets referred to in paragraphs 7 and 8; considers that a reduction in the noise pollution around airports can best be achieved by a combination of measures;
12. Asks the Commission to develop targets to define the concept of "noise sensitive airports";
13. Encourages the Community to continue to actively contribute to the work of the ICAO in identifying and evaluating market-based mechanisms and new emission parameters for the climb and cruise phases of flight;

Gaseous emissions

14. Regrets the vague wording adopted by the Commission regarding this issue; and calls on the Commission to define clear objectives for gaseous emissions, particularly in the context of the examination of this issue under the CAEP/5 work programme;
15. Considers that there should be a level playing field between the demands made on international aviation and the demands made of other industrial and transport sectors, and therefore considers that an ambitious but feasible target for Annex 1 (developed) countries would be the same target as that set out for other sectors under the Kyoto Protocol;

Air traffic management

16. Asks the Commission to develop a new policy framework to allow slot allocation also to be linked to the environmental performance of aircraft and operations, including the prioritisation of slot allocation for journeys where high speed rail alternatives do not exist;
17. Supports the current efforts of the Commission to re-structure Air Traffic Management in Europe since, according to the IPCC Report, ATM improvements could help to reduce fuel burn by 6 to 12%;
18. Calls on the Member States to adopt the necessary measures to develop a coherent airports policy, seeking to create complementarity between regional and national airports;

Kerosene tax

19. Considers it necessary, for reasons of environmental policy, to introduce a kerosene tax on all routes departing from the EU (paragraph 26, Option A), if international and/or bilateral rules permit this; the Commission should investigate the introduction of such a measure , only if it is proven that such a solution is technically feasible, economically reasonable and environmentally beneficial;

Environmental charges

20. Considers that if international agreement is not reached on a kerosene tax, or on other economic instruments to ensure sufficient environmental improvements, a Community-wide environmental charge should be introduced, based on the polluter pays principle, and therefore supports the Commission's proposed actions in this field. Such a charge should ensure a fair competition between modes of transport. While the charge would be introduced at EU level, the revenue should be returned to member states to be invested in further reducing the environmental damage caused by aviation;

Direct Subsidies,

21. Calls on the Commission urgently to examine the economic impact of the zero-rating of VAT on air tickets, kerosene, and the purchase of new aircraft, as well as the exemption of kerosene from excise duty, and direct subsidies to airports and airlines, in the context of ensuring fair competition between modes, and to bring forward a report by the end of 2000;

Land-use Planning

22. Supports the Commission proposal to establish, in close cooperation with Member States, recommended best practice on land-use planning in the vicinity of airports;
23. Asks the Commission to develop guidelines on land-use planning in order to standardise national legislation and to co-ordinate Member States' action. Member States should prevent the development of urbanisation in the vicinity of airports so as to safeguard citizens' health and airports' long-term expansion opportunities;

Concluding remarks

24. Calls on the Member States to give the Commission a clear mandate for negotiation for the 33rd ICAO Assembly in 2001, so environmental and transport policy objectives are able to be vigorously pursued and carried through at the assembly;
25. Instructs its President to forward this resolution to the Council, the Commission and the Governments of the Member States.

EXPLANATORY STATEMENT

General Remarks

The rapporteur welcomes the Commission's Communication, which both acknowledges the rapidly growing local, regional, and global environmental impacts of air transport, and recognises that this trend is unsustainable and must be reversed because of its impact on climate and on the quality of life and health of European citizens. The Communication also makes clear that current growth rates in aviation are outweighing environmental improvements achieved through technology and efficiency developments, and therefore that the long-term goal must be to achieve improvements to the environmental performance of air transport operations that outweigh the environmental impact of the growth of this sector. Its proposal to expose the EU's air transport system to a system of "Reward the best – Punish the worst" by drawing a clearer line between operations on the basis of their environmental quality could make significant progress towards this goal. However, while the Communication describes a number of possible instruments such as economic incentives and stricter standards, it lacks measurable objectives with timeframes, and proposes too few concrete steps to move aviation in a sustainable direction. It is therefore extremely important that targets are set and dates observed, in order to enable the aircraft industry, airlines, and users to adapt to legislative measures in good time.

Aircraft Noise Standards

Noise issues are of growing concern to European citizens. A review of the EU's Fifth Environmental Action Programme found that around 80 million people in Europe are exposed to noise levels which scientists consider to be unacceptable, while a further 170 million people are exposed to levels which cause annoyance. In particular, it is widely understood that noise from aircraft is perceived to be more annoying compared with similar noise levels from other modes of transport. Recent studies, most notably the report of the Dutch Health Council on "*The Impact of Large Airports on Health*" (1999)¹⁰, also demonstrate a link between aircraft noise and sleep disturbance, health and learning acquisition. Communities living around airports are particularly concerned with aircraft noise events at night.

Aircraft noise can be limited in two ways: at source, through more stringent certification standards and phase-out programmes for non-compliant aircraft; and through operational and land-use planning measures at airports.

(a) Noise Reduction at Source

Current noise standards for new aircraft have been in existence since 1977. In the EU and US, some airports have witnessed a reduction in average noise exposure levels as these aircraft have been progressively retired from service. However, this is likely to be a short-term benefit: as demand for air travel continues to increase exponentially, the consequential growth in aircraft movements will erode these benefits and cause a worsening in the noise climate at

¹⁰ "*Public Health Impact of Large Airports*", Health Council of the Netherlands, The Hague 1999

many airports (particularly since many manufacturers have publicly acknowledged that there is only limited scope for future improvements at source). The need for more stringent noise standards is pressing. The EU needs to pursue meaningful stringency targets through the ICAO process in time for CAEP/5 (ICAO's Committee for Aviation Environmental Protection) to recommend a new standard when it next meets in April 2001. There is considerable scope for a new stringency standard: with Chapter 3 over 23 years old, some of the best performing aircraft in this Chapter improve upon the standard by a margin of over 25 dBA.

With passenger numbers set to double over the next 15 years in Europe, it is a realistic assumption that aircraft movements will also increase by around 100% (while a gradual shift to larger aircraft was initially forecast by the industry, many airlines are currently “downsizing” the available seat capacity on some routes). Consequently, to offset the increase in noise events over this period, an average improvement of around 10dBA will be required across the world aircraft fleet to prevent any overall increase in noise exposure levels at European airports.

Further improvements in noise stringency for new aircraft would help to deliver this target, but the effect on noise will only be gradual since the rate at which they will enter the fleet is relatively slow. Hence, any international agreement on stringency should be accompanied by a phase-out strategy for Chapter 3 aircraft that cannot meet the new stringency standard. In recognition of the existing noise performance range within this Chapter, the phase-out strategy could identify two stages: the first would remove the worst performing aircraft by a certain date, while all remaining aircraft which do not meet future new stringency target would have a longer compliance period. The targets proposed in the Resolution strike a balance between making significant progress, while at the same time being achievable and realistic, and are among the options currently being discussed at ICAO.

It is also important for the EU to agree a programme for unilateral action in the event that ICAO fails to reach any agreement next year. With the number of aircraft using Europe's airports growing each year, there is a strong environmental justification for implementing regional measures along the lines of the EU's Regulation on huskitted aircraft, when international standards are not forthcoming.

(b) Operational and Land-use Measures

Aircraft have become quieter at source over the decades but this has not been matched by a reduction in annoyance. This is largely because community reaction to noise is determined not only by the intensity of noise events, but also by their incidence. Neither can stringency standards guarantee a reduction in noise at individual airports.

These issues can be addressed by using several measures which can generally be classified as (i) noise related charges based on different classifications of aircraft; (ii) operational restrictions applicable to different classifications of aircraft; and (iii) land-use policies. The EU should be encouraged to develop a common aircraft noise classification for Europe. It is important that this is validated using operational noise measurements since these can vary from the certification data provided by manufacturers. DG Environment has already introduced plans for a Directive on community noise. While this will require member states to report and map noise exposure levels at airports, the Directive will also introduce a

harmonised noise index (particularly important in defining an 8-hour night period), and measurement and calculation procedures. Frameworks and guidance to achieve the above are necessary, but the EU needs to define targets for airports, especially the worst affected. Community-wide regulation is therefore needed to give local authorities and airports the power to limit noise and emissions at particularly “noise sensitive” airports. As a priority, the Commission should put forward proposals that guarantee EU citizens the right to an 8 hour night sleep, and prevent the possibility of unfair competition between (local) airports at the expense of necessary sleep of those citizens that live in the vicinity of airports. The targets proposed in the Resolution are based on the recently adopted World Health Organisation Guidelines for Community Noise Exposure, March 2000.

Gaseous Emissions

According to the IPCC Special Report on Aviation and the Global Atmosphere, emissions from air transport contribute around 3.5% to human produced global warming¹¹ These emissions are projected to increase by some 3% annually between 1992 and 2015 as the volume of air transport increases faster than the technological development of aircraft towards fuel efficiency. With the number of people flying virtually doubling over the next 15 years, this means increasing airport capacity, more flights, more pollution, and increasingly crowded airspace. This growth in traffic volume – which is expanding at nearly 2.5 times the average economic growth rates since 1960 - is stimulated by the fact that the prices for the traveller do not reflect the full environmental costs of aviation, and by the absence of VAT and taxes.

Air travel is already the world's fastest growing source of greenhouse gases like carbon dioxide. Globally, the world's 16,000 commercial jet aircraft generate more than 600 million tonnes of CO₂, the world's major greenhouse gas, per year. Moreover, the contribution of aviation to global warming is greater than sometimes thought, since NO_x and Contrails in particular also have strong greenhouse effects. Indeed, NO_x emissions, at high altitudes, are a more effective greenhouse gas than CO₂, while below the flight corridors where air traffic is concentrated, contrails could have a greater greenhouse effect than other greenhouse gas emissions¹² The recent IPCC report therefore highlighted the fact that overall contribution to greenhouse warming by aircraft (including Nox, contrails, etc) is two to four times larger than by aircraft CO₂ emissions alone. Hence it is estimated that greenhouse forcing by global aviation will more than double in 2015 compared to 1990 levels. (See Appendix for comparison of primary energy consumption and total emissions from various transport modes).

According to the highest scenario considered in the IPCC report, by 2050 emissions from aircraft could contribute up to 15 % to the overall global warming produced by human activities. It is important to note however, that even the highest scenario does not take into account the results of the implementation of the Kyoto Protocol. If the Kyoto target were achieved, then the share of aviation would be a lot higher. Hence, if measures are not taken,

¹¹ "Aviation and the global Atmosphere", Intergovernmental Panel on Climate Change Special Report, Cambridge University Press, 1999

¹² "Aviation and its impact on the environment", European Federation for Transport and Environment, T&E, Brussels, 1999. Contrails are the trails of tiny ice particles which are formed when aircraft emit water vapour into the atmosphere where temperatures are approximately -40C.

by 2012 the emission reductions under the Kyoto Protocol would have been offset by about 50% due to increasing bunker emissions from aviation, which are not subject to the Kyoto Protocol. This makes action to reduce aviation emissions now both urgent and essential.

It could be that, given its nature as a world-wide body that operates by consensus, ICAO may not be able to agree a strong global instrument at the 2001 Assembly. Therefore, it seems inappropriate for the European Union to rely entirely on a possible global instrument. Whatever that instrument, the EU still needs to comply with the Amsterdam Treaty and the integration principle, which require that concrete targets and timetables are set up for the transport sector, of which aviation is the fastest growing mode.

It is therefore urgent that the EU takes the lead and comes up with a concrete action plan, containing credible targets and instruments. A relatively ambitious, but feasible, target for the developed countries, would be a -5% reduction of all international greenhouse gas emissions (including contrails, NO_x etc as well as CO₂), compared to 1992, to be achieved by 2008-2012 (the first budget period according to the Kyoto Protocol). This is also the assumption behind the options under discussion in the preparatory working groups for CAEP/5.

Finally, it is also worth noting that intra-EU flights (ie a flight from Paris to Madrid) count as international flights, although the EU as a whole has one target for all greenhouse gas emissions. This "anomaly" will need to be tackled when establishing targets for the aviation sector in the EU.

Kerosene Tax

Since the introduction of a kerosene tax on all intra-EC air routes for Community carriers alone would be unlikely to strike the right balance between environmental, economic and internal market requirements, it would be far more efficient to apply this measure on all routes departing from a Community airport. However, the political barriers to achieving this are significant, since it would require the renegotiation of many thousands of bilateral agreements, or consensus agreement within ICAO. Nevertheless, it is critical that measures are taken to reduce emissions. Regulation and communication alone do not have sufficient powers. Therefore economic instruments on a European level must be undertaken.

Environmental Charges

While work in this area must be co-ordinated with the work taking place in the context of ICAO's CAEP/5 work programme, which is aiming to present conclusions to the 33rd Assembly in 2001 for a modernised policy framework for environmental levies including taxes and charges, this does not prevent the European Community from pursuing its own proposals, in case ICAO fails to modernise existing rules. One model deserving further examination would be a European Aviation Levy, designed to internalise the external costs of climate change, along the lines of the model put forward in a recent study for members of the German Government by Dietrich Brokhagen and Max Lienemeyer¹³

¹³ Proposal for a European Aviation Levy to Internalise External Costs of Climate Change, Berlin, September 1999

The objects of the levy would be major aircraft effluents contributing to global warming – CO₂, NO_x, and a mix of pollutants contributing to contrail formation. The levy would be imposed on all airlines for the amount of pollutants emitted on all flights starting or arriving at an airport located in the EU. The levy would apply to all inter-European flights irrespective of the origin of the airline or passenger. However, on international flights from or to the EU, the levy would be reduced by 50%.

The main rationale for this design of the levy is that the responsibility for the external climate costs of aviation is in general laid on the two States, which are linked by the flights. If the two states are member states of the EU, the EU represents both states and is therefore politically responsible for the entire amount of emissions of that flight. However, on flights leaving or coming to the Union, the EU shares the responsibility for the emissions with another state and is henceforth only responsible for 50% of the emissions.

The rates of the levies on the different pollutants are balanced to each other, taking into account their greenhouse forcing effect. This provides a sound ecological steering effect of the levy on airlines and engine/aircraft manufacturers. According to estimates in the Study, by 2020, 25-50% of emissions could be saved due to the levy, compared to business as usual. The bulk of this effect would be due to changes on the supply side rather than demand decrease. A special steering effect might bring about contrail avoidance with associated additional major environmental gains.

The design of the levy would minimise distortions of competition among airlines, compared to options discussed earlier in the literature. Direct distortions among European and non-European airlines as well as among European airlines themselves are ruled out, while indirect distortions would be very limited. Environmental flaws such as tankering in the case of a unilaterally introduced fuel tax would be ruled out completely.

The amount of the emitted pollutants will be determined by measuring the consumed fuel and by subsequently applying emission indices thereon. Emission indices reflect aircraft type, engines, and distinct distance classes. A special scheme for the determination of fuel consumption combines least bureaucratic effort and necessary scrutiny.

The levy would be in line with international prohibitive law, namely the Chicago Convention, bilateral air service agreements and the WTO. Starting from the “polluter pays” and “internalisation of external costs” principles, it is fully in accordance with the Rio Declaration. It would be based on Article 175 EC-Treaty, and the revenues could be used to feed a European Fund for greenhouse gas abatement measures. As the character of the levy is the substitution of a prohibition, this market based instrument must be based on the subject matter competence of environmental protection. This requires at the same time that the revenue be spent to reach this objective. As the specific scope of this levy is climate protection, the income has to be used in areas such as the “greening” of the aviation industry or the breakthrough of renewable energies in the EU.

The proposed levy is a hybrid between two well known options, an 'en route' emission levy and a kerosene tax: The option of an 'en route' emission levy is similar to the 'en route' air traffic control charge to be paid by eg European airlines to Eurocontrol. It would be calculated according to the distance (known from the air traffic control data) and engine characteristics. Under a kerosene tax option, simply all fuel bunkered on airports would be subject to a tax

The advantage of such a levy over an 'en route' charge is that it would be based on both ruled consumption and on engine characteristics. However, since the emissions are calculated by applying emission indices to an amount of fuel consumed in reality, they are much more accurately determined in the proposed levy than in the case of the 'en route' levy, which is calculated purely theoretically. The advantage of such a levy over a kerosene tax is that it is more politically feasible, and can – if necessary – be implemented effectively at EU level alone. Unlike an international kerosene tax, it would require fundamental changes neither to existing policies at ICAO-level, nor to the existing bilateral Air Service Agreements.

Promoting Modal Shifts

The Commission's recognition that encouraging a modal shift from short haul air travel to high speed train may form an important part of the strategy to reduce the environmental problems associated with aviation is to be welcomed. Of the 7 million flights within European airspace in 1997, 69% were under 1000km, and 45% were under 500km. The Intergovernmental Panel on Climate Change (IPCC) has suggested that up to 10% of existing short haul flights in the EU could already be replaced by existing high speed rail links. Incentives are needed to ensure this shift takes place. Some airlines are already moving in this direction. Lufthansa has decided that by 2002 all domestic trade will be shifted to rail to enable it to have more space at Frankfurt for long haul.

One option to be explored is the possibility of prioritising slot allocation for those journeys for which high speed rail alternatives do not already exist. This could be called for in the context of the planned review of the Council's Regulation (No.95/93) which is already overdue. It could also be pursued via the provisions of Council Regulation (2408/92) on access for Community air carriers to intra-Community routes.

It is important to note, however, that in the absence of measures to manage the growth of aviation in tourism and leisure, the gains to be had from High Speed Rail substitution may be negated (in environmental terms) by expansion in air travel elsewhere.

The possibilities for substituting electronic means of exchange for the physical transport journey have been frequently rehearsed. There is evidence that for many forms of interaction the use of email, data transfer, and video link up can reduce the need for physical travel, especially over the distances served by air transport. It is also cheaper and makes better use of time. Evidence on the extent to which this is happening is scarce, but the experience of telework in the EU where the substitution is for the journey to work by car shows that the potential is there to be exploited when cultural and organisation issues are resolved.¹⁴

Direct Subsidies, Indirect Subsidies, and Funding

At present, the zero-rated VAT on air tickets, kerosene, and new aircraft are an exception to EU practice (in that all goods and services are taxed except those relating to international trade). This situation is not fair, since it distorts competition among transport modes. Neither is it efficient, since it "over-stimulates" aviation. Addressing this anomaly would

¹⁴ John Whitelegg, Aviation: A Briefing Document, Eco-Logica Ltd, Lancaster UK, March 2000

create a level playing field and is fully in line with the aim of liberalising the European air transport market. In the cases where direct subsidies are given to airlines and airports (operational costs and infrastructure), these should also be examined.

Health Impacts of Aviation

A growing number of studies are identifying adverse health impacts from aviation for those living in the vicinity of large airports. These are caused by noise disturbance, as well as by ground level air emissions from aircraft and associated traffic. As well as effects that are not directly harmful to health (including interference with communications, disturbance to rest and relaxation, reduced efficiency when carrying out difficult tasks and reduction in the quality of life), there are also health threatening effects. Among them are stress, insomnia, high blood pressure, deterioration of the immune system, predisposition to heart disease, and hearing problems. These are important areas for further investigation. A recent Dutch study, *Public Health Impact of Large Airports*,¹⁵ concluded that airport operations systems do have an impact on public health, with the potential of causing clinically observable disease in the long-run. It recommended in particular further research into the negative impact of aircraft noise on the cognitive abilities of young children.

Evidence is also growing of a possible link between cosmic radiation and cancers among aircrew. This comes as the May 2000 deadline approaches for EU member states to implement EC Article 42, Council

Directive 96/29/Euratom of 13 May 1996, which obliges them to take stock of the cosmic radiation which aircrews are exposed to when they fly. In a recent medical study of instances of cancer among air crew, a Danish team found "increased risks of acute myeloid leukaemia and total cancer" among Danish male jet cockpit crew members flying more than 5000 hours. The researchers concluding in their report, published in *The Lancet* medical journal on 11 December, 1999, that the finding "could be related" to cosmic radiation, or radiation originating outside the Earth's atmosphere, which has greater effect as altitude increases. Other studies show that pilots experience higher mortality rates from some cancers than the general population. According to the UK's National Radiological Protection Board, aircrew receive an average radiation dose of 4.6mSv a year – compared to 3.6mSv received by nuclear workers. In the light of these findings, the Commission should undertake a review of the existing literature, and consider whether to commission further research.

Information and Communication

Basic environmental protection requires improved monitoring and better environmental data. Information on air pollution, emissions, greenhouse gases and noise footprints is an important input into the public debate about aviation and airports and is, indeed, a primary requirement of any stakeholding exercise conducted in pursuit of Local Agenda 21 strategies. Independently verified data bases that can be accessed by local residents is a minimum requirement.

Public education and awareness are very important in aviation. There will be many airline customers who have never thought of airports and flying as an environmental problem. Information should be widely available so that these groups have the background information

¹⁵ op cit

they need to understand the changing circumstances of aviation. Informed choice is a key component of transport demand management and environmental policy.

Conclusion

The latest scientific evidence on the state of the global environment (UNEP, 1999) and on the contribution of aviation to global inventories of greenhouse gases point to the need for a fundamental change in public policy towards aviation. The current impact of aviation and the forecasts of future impacts bring into sharp focus the need for a policy that is based on science and that can bring about a re-positioning of aviation within the context of sustainable development and overall environmental objectives. The science is clear, the policy measures that are available are clear. All that remains to be put in place is a clear aviation policy. The Commission's Communication is an important first step in this process. Once priorities, targets, and timetables have been set, there will be a real chance to shift aviation onto a more sustainable basis.

Appendix

Primary energy consumption and total emissions from various transport modes, for a 1000km journey by one person.

The table below is only a very rough guide to the emissions caused by various transport modes. A significant omission is that rail transport has not been separated into High Speed Rail and standard rail. Moreover, the different effect of the different emissions (eg the far more damaging effect of NOx emissions at high altitudes) has not been captured.

Primary energy consumption and total emissions from various transport modes, for a 1000 km journey by one person¹⁶

	Car without catalytic	Car with regulated	Diesel car	Rail	Bus	Air
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¹⁶ Knisch/Reichmuth: Verkehrsleistung und Luftschadenemissionen des Personenflugverkehrs in Deutschland von 1980 bis 2010 unter besonderer Berücksichtigung des tourismusbedingten Flugverkehrs. Zwischenbericht im Rahmen des Vorhabens 'Massnahmen zur verursacherbezogenen Schadstoffreduzierung des zivilen Flugverkehrs', ifeu - Institut für Energie und Umweltforschung Heidelberg im Auftrag des Umweltbundesamtes, Berlin 1996 (Table 9, p. 52 and explanations on p. 51)

	converter	catalytic converter				
Primary energy consumption (MJ)	1 050	1 100	1 000	730	410	1 500
CO ₂ (g)	75 000	79 000	73 000	33 000	30 000	110 000
CO (g)	6 240	1 450	110	14	67	100
SO ₂	14	15	61	30	25	42
NO _x	1 020	260	230	61	340	520
HC without CH ₄ (g)	380	51	24	4	37	56
CH ₄	24	13	5.5	0.6	3.1	9.8
Diesel particles (g)	0	0	47	2.6	14	2