

Problems of Transnational Regulation: A Case Study of Aircraft Noise Regulation in the European Community

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I. INTRODUCTION: GROWTH OF AIR TRANSPORT

The civil aviation sector represents one of the most significant progressions of this century. From its uncertain beginning at the dawn of this century, air transportation has come a long way. Ready accessibility to air transport services has meant that the world is perceived as being much smaller and that air transport is substantially more convenient. American and European entrepreneurs embarked on an undertaking designed to revolutionise the provision of transport services. Its use has increased dramatically and in such a proportion that today it is a common mode of travel.

Remarkable growth and development in the range of air transport services and technology earned the sector a distinctive international character. However, in the initial stages of its development, air transportation focused primarily on domestic services. The emergence in subsequent years of international services reflected not only their importance within the industry, but also that these new services were a crucial source of revenue for survival. Perhaps as a consequence of those pioneering years, the most outstanding feature of the industry was its international character; outstanding largely because it included not just the air industry but allowed "every part of the world [to be reached] within a few hours of every other and, in doing so . . . brought about a revolution in world trade, in business contacts, and in methods of diplomacy."¹

The growing demand for international air transport services meant the level of such activities had to increase, resulting in a need to coordinate the provision of those services and their cognate activities. Only after the Second World War was the pressing need for such an action recognised. With the wide availability of surplus aircraft in addition to increased flying and navigational experience providing fertile ground for commercial exploitation, services inevitably multiplied many times over. Aircraft and personnel were quickly adapted for commercial purposes.² Concern for this immense growth and the accompanying implications produced the impetus to drive the countries providing international services to search for a means to ensure an orderly development.

The culmination of the search was a 1944 Chicago meeting convened at the instigation of the governments of the United States and the United

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1. Peter G. Masefield, *Foreword* to R.E.G. DAVIES, *A HISTORY OF THE WORLD'S AIRLINES* (1964).

2. For an excellent account of air transport history, see DAVIES, *supra* note 1. See also BIN CHENG, *THE LAW OF INTERNATIONAL AIR TRANSPORT* (1977) (regarding developments leading up to the formation of an international framework).

Kingdom to discuss various concerns arising from international air transport activities. This meeting, the Convention on International Civil Aviation of 1944 (Chicago Convention),³ set out the general principles of international civil aviation and established a framework of international co-ordination, co-operation and regulation of services.⁴ At that point, although safety was the primary concern (and still is today), other issues demanded attention. Therefore, the Chicago Convention addressed several non-agenda items including the technical aspects of air transportation affecting the environment such as engine-fuel emission or noise generated by aircraft engines.⁵

These rapid developments, however, have not progressed without severe consequences and difficulties. Perhaps one of the most serious consequences to emerge has been environmental disturbances. The International Civil Aviation Organization (ICAO) explicitly recognized this aspect and made a statement to that effect.

The ability to travel safely, comfortably and quickly across vast distances has given human beings greater access to distant places and a heightened awareness of their own cultural and social diversity. However, it must be recognized that - like many other human activities - civil aviation can sometimes have adverse environmental consequences.⁶

Particularly problematic for the environment is the noise disturbance caused by aircraft movements and related activities. The disturbance can be considerable, *a fortiori*, in an area where the air traffic is dense. Although that disturbance may be great, the other prices that have been paid should not be minimized or considered insignificant.

This article focuses specifically on air transport and the environment; more precisely, aircraft noise and the difficulties associated with the European Community (EC) regulatory framework. There are two objectives here: first, to trace the developments that brought aircraft noise concerns to the forefront and; second, to briefly examine both the legal

3. Convention on International Civil Aviation, Dec. 7, 1944, 61 Stat. 1180, 15 U.N.T.S. 295 [commonly referred to as the Chicago Convention]. Both the United States and the United Kingdom are signatory parties to the Convention.

4. The Convention also created the International Civil Aviation Organization (ICAO) to pursue the objectives of the Convention. For a further discussion on the ICAO, review Professor Bin Cheng's excellent text, *supra* note 2.

5. The Convention today has 16 Annexes: Personnel Licensing; Rules of the Air; Meteorological Service for International Air Navigation; Aeronautical Charts; Units of Measurement to be used in Air and Ground Operations; Operation of Aircraft; Aircraft Nationality and Registration Marks; Airworthiness of Aircraft; Facilitation; Aeronautical Telecommunications; Air Traffic Services; Search and Rescue; Aircraft Accident Investigation; Aerodromes; Aeronautical Information Services; Environmental Protection; Security against Acts of Unlawful Interference; Safe Transport of Dangerous Goods by Air.

6. INTERNATIONAL CIVIL AVIATION ORGANIZATION, ENVIRONMENTAL TECHNICAL MANUAL ON THE USE OF PROCEDURES IN THE NOISE CERTIFICATION OF AIRCRAFT (2d ed. 1995).

framework for international air transport and the relationship of EC laws with the laws the EC Member States. The latter objective garners a measure of importance to the extent that Member States failing or refusing to incorporate provisions of an international treaty or convention will have little or no choice as to the applicability of those provisions if they were adopted by the EC *en bloc*. The third section considers aircraft noise measures and some of the difficulties encountered by the EC both in relation to the implementation by Member States and their "extra-Community" effect in respect to non-Community countries and air carriers. Finally, some concluding remarks are made in an attempt to shed some light on the future of aircraft noise regulation within the EC.⁷

II. THE EMERGENCE OF AIRCRAFT NOISE

Perhaps in the days when travelling by air was less common, one associated aircraft noise with progress and prestige. But, as travelling increased, so did the frequency of flights. Air space congestion resulted from denser air traffic. Consequently, further infrastructural facilities such as accessible airports were needed. However, consequences necessarily accompanied the developments. Community standards and patterns of living in the vicinity of airports were affected. The elasticity of tolerance in respect of these consequences to a large extent depended upon whether they were direct or indirect as much as whether the standard of living changes were for better or worse. Protestations against rapid developments in air transport have already been manifested in various ways. Examples include disobedience against the construction of the Japanese Tokyo-Narita Airport in 1971 and the protracted inquiries in the case of London-Stanstead Airport. Current plans at the United Kingdom's (UK) Manchester Airport to build a second run-way have divided opinions of the local community and aroused strong concerns.

It is axiomatic in the language of the environment to refer to chemical or gaseous pollution. Ironically, this is a narrow and misleading conception. It is often taken for granted that environmental protection is the exercise of conserving nature and natural resources, thereby seeking to prevent damage to them. While this is largely true, it is simply an ecologically-based environmental concern. Issues relating to the environment, however, are capable of having a considerably wider scope than the traditional conception. Noise or vibration is a specific form of environmental disturbance, but the "target" of the disturbance or pollution, while possibly ecological to an extent, reflects sociological concerns.

Noise, whether from road drilling or loudspeakers, affects the toler-

7. The article does not seek to present a picture in which regulatory problems across national boundaries in other areas of air transport do not exist.

ance level of human beings, as does vibration. It may be argued that protection from excessive aircraft noise may constitute a species of the "third generation of human rights."⁸ Noise from aircraft engines affecting the human population can be conveniently reduced to three kinds: *community noise*, *passenger noise*, and *ground noise*. Community noise is the aircraft noise affecting residents in the vicinity of airports or those communities falling under the flight path. The distinction must be drawn between residents or communities existing in a particular locality prior to the arrival of air transport activities and those moving as a result of those activities. This distinction is crucial if proof of a right is a condition. By contrast, both passenger noise (noise affecting passengers whilst airborne) and ground noise (noise affecting the maintenance crew and personnel at airports) are preceded by their very own existence. Accepting this premise, noise or vibrational disturbances must constitute a form of environmental pollution.

Further, within the notions of ecological and sociological pollution, a sub-category of *biological* pollution is conceivable. Biological effects from ecological pollution may arise in situations where drinking water is contaminated leading to poor health or fatalities. Biological effects of sociological pollution may evidence themselves in the form of deafness from excessive noise or even heart failure from extreme vibration or drilling.

In spite of a regulatory framework for international air transport, neither the issue of environment nor specifically aircraft noise were items of pressing concern. The lack of action was scarcely realised until it became a critical problem. The first recorded attempt to tackle the issue occurred in 1966. The UK International Noise Conference was organised jointly by the government and aircraft manufacturers. In spite of its domestic dimension, the Conference resulted in the "Special Meeting on Aircraft Noise in the Vicinity of Aerodromes" in 1969 held under the auspices of the ICAO. The provisions of Annex 16 to the Chicago Convention,⁹ then entitled *Aircraft Noise*, owe their existence to that meeting.¹⁰ The prevailing view maintained if the regulation of and standard-

8. A third-generation human right is generally recognised as the right beyond those included in the Universal Declaration of Human Rights of 1948, the 1966 Covenant on Civil and Political Rights and the Covenant on Economic and Social Rights of 1966. This is the subject of a current analysis by the author and on which comments are welcome. For now, see W. PAUL GORMLEY, *HUMAN RIGHTS AND ENVIRONMENT: THE NEED FOR INTERNATIONAL CO-OPERATION* (1976).

9. ICAO, *Environmental Protection: International Standards & Recommended Practices*, ANNEX 16 TO CHICAGO CONVENTION OF 1944 (3rd ed. July 1993).

10. Annex 16 was retitled *Environmental Protection: International Standards and Recommended Practices* in 1981 to reflect the expanded scope that now includes Volume II dealing with gaseous emissions from aircraft engines.

setting for aircraft noise was to be effective, a coordinated effort conducted through an international body was indispensable - to the extent the international characteristic of civil aviation had undoubtedly become inherent. Both meetings were therefore significant in building the foundations for an international effort dealing with the problem of aircraft noise.

The process of controlling aircraft noise as a form of environmental pollution creates both complex and difficult problems just by virtue of the polycentric nature of the decisions. Addressing the problems does not simply call for a straightforward decision of whether the noise ought to be ceased or whether the claims of the affected parties should be rejected, but involves a delicate balancing of difficult questions and the sometimes conflicting interests of the community and aircraft engine manufacturers. Since aircraft noise is generated at different points and its effect varies according to the specifics of the particular situation, controlling aircraft noise by legislation does not always provide the most appropriate option. A number of different forms of control may need to be adopted, their suitability being dependent on the ways and extent parties are affected or the source of the noise in question.

There are many methods of aircraft noise regulation. Planning control, a common approach, determines the level of protestation to the development of a new airport through inquiries and consultations. Local control of developments toward the parameters of an airport is also frequently employed to deal with the inconvenience of aircraft noise. Providing subsidies for insulating houses and buildings affords an *ex post* remedy. This remedy has been utilized in two major UK airports.¹¹ Still another approach purchases properties blighted by aircraft noise, allowing owners of the affected properties to move elsewhere; a move not otherwise possible given the deflated value of their properties. It is often part of the environmental protection programme of airport authorities and proprietors to set aside a generous amount of their income towards the costs of the latter two schemes. Private law remedies in tort represent a further form of control which has been considered elsewhere.¹² Perhaps the more effective form of control is the regulatory process of certification. The process involves a licensing system which imposes conditions or circumstances designating a particular level of acceptable aircraft noise. The conditions may circumscribe the hours aircraft with a certain type of engine may operate - in essence curfew control.¹³ How-

11. London Noise Insulation Grants Schemes provided relief for Gatwick and Heathrow airports.

12. See Peter Davies & Jeffrey Goh, *Air Transport and the Environment: Regulating Aircraft Noise*, 18 *AIR & SPACE LAW* 123, 132-134 (1993).

13. In respect to the United Kingdom, the Civil Aviation Act, 1982 sec. 78(3) (Eng.), vests

ever, the major portion of the certification process concerns the aircraft engine types, and therefore the noise that they produce. Conditions or circumstances imposed through the certification process emanate from standards laid down at the international, European and national levels.

The ICAO promulgates international standards in accordance with Volume I of Annex 16 to the Chicago Convention. The ICAO standards have had a major influence on global aircraft noise emission standards.¹⁴ Due to the rapid expansion of air transportation there has been a call for greater regulatory intervention by the EC institutions. As part of the wider Community programme to harmonise standards on the environment, four Council Directives have been adopted by the Council of Ministers to regulate noise from aircraft engines. More recently, the Council indicated its intention to formulate a common position on aircraft noise for a presentation at the next meeting of the Committee of Aerial Environment Protection of the ICAO in December 1995.¹⁵ Focus on the national regulatory arrangements by the national regulatory agency responsible for implementing domestic legislation that gives effect to international standards or EC rules is the next step in the analysis. Although the separate nature of each institution and the rules they enact may be argued in the abstract at great length, in practice the substance of their work and the rules they produce regarding aircraft noise are very similar.¹⁶

III. INTERNATIONAL STANDARDS: ANNEX 16

The premise from which to begin understanding the system of international air transport flows from the fundamental principle of *airspace and territorial sovereignty* as provided for by Article 1 of the Chicago Convention. *Each contracting State recognises that every State has complete and exclusive sovereignty over the airspace above its territory.* The significance of this provision is the recognition that it attaches to the sovereign status of States and, subject to technical exceptions, no aircraft may fly into the space and territory of another State. This has been the

in the Secretary of State the power to impose certain periods when the taking-off and landing of aircraft are prohibited or limited; see now the most recent decision on the policy of the government under this provision: *R. v. Secretary of State for Transport ex parte Richmond-upon-Thames London Borough Council*, 1 All E.R. 577 (Q.B. Div'l Ct. 1994).

14. A fact which should not invoke much surprise since Convention signatories probably signed onto these standards prior to the convention.

15. 1994 Official Journal of the European Communities; 1994 O.J. (C 189) 14 [hereinafter O.J.].

16. Aircraft noise is not dealt with solely by governmental organizations. In fact, several non-governmental organizations have begun to emerge to respond to the issue: the European Environmental Bureau, the Airfields Environment Federation, the Aircraft Noise Monitoring Advisory Committee and others.

single most responsible provision that has resulted in the vast number of bilateral air service agreements and nationalistic practices between countries.

Annex 16 to the Chicago Convention, which incorporates aircraft noise and fuel emissions, was adopted in 1971 following the recommendations of the 1969 "Special Meeting on Aircraft Noise in the Vicinity of Aerodromes." That meeting also resulted in the establishment of the Committee on Aircraft Noise to "assist ICAO in the development of noise certification requirements for different classes of aircraft."¹⁷ Following the decision to expand the scope of Annex 16 in 1981 to include gaseous emissions from aircraft engines, the ICAO is now assisted by a body with a wider term of reference known as the Committee on Aviation Environmental Protection which is responsible for reviewing and proposing noise standards. It is also useful to note the close co-operation between the environmental institutions of the International Air Transport Association (IATA), a non-governmental organisation, and the ICAO. Recently, the role of IATA in environmental matters has increased considerably. Its environmental policies in relation to aircraft noise (and gaseous emissions) are promoted through its Environmental Task Force, although aircraft noise is dealt with specifically by the Aircraft Noise and Emissions Task Force.¹⁸

The plan of the ICAO regarding aircraft noise includes the following: establishing procedures for describing and measuring aircraft noise; assessing human tolerance to aircraft noise; aircraft noise certification; formulating criteria for establishing noise abatement procedures that address ground run-up of aircraft; and land-use control. Apparently, the ICAO considers the most effective method of regulation the certification process for different classes of aircraft and aircraft engines by permitting or prohibiting their use. The mechanics of this regulatory process involve the phasing-out of certain aircraft and their engines. In particular, it attempts to reduce, and eventually remove, the use of what is known as Chapter Two (2) aircraft. Chapter 2 of Volume I of Annex 16 applies to those aircraft designs certified before 1977. Chapter 3, with comparatively more stringent standards, applies to aircraft certified after 1977. The overall process of removing noisier aircraft from the skies is, however, expected to be accomplished not only by phased replacement with

17. ICAO, *THE CONVENTION ON INTERNATIONAL CIVIL AVIATION: THE FIRST 46 YEARS* 36 (1991).

18. A further account of the role of IATA is found in J.W.S. BRANCKER, *IATA AND WHAT IT DOES* (1977). For a useful insight into the interdependence of ICAO and IATA, see *THE FREEDOM OF THE AIR*, Ch. 2-4 (Edward McWhinney & Martin A. Bradley, eds., 1968) (a collection of papers presented at a closed conference held at the Institute of Air & Space Law at McGill University in Montreal).

newer and quieter aircraft or modifications to existing noisier aircraft, but also by the adoption of standard noise abatement operating procedures, or perhaps by a combination of these measures.

The regulation of aircraft noise is a process involving a plethora of considerations from land-planning policies to the use of preferential runways. Since the changes in regulation are closely related to technological advancement, inevitably a regulatory process of this nature also effects the future production of aircraft. Further, there is no doubt that aircraft engine manufacturers safeguard their commercial interests by paying quite a bit of attention to noise certification standards. The standards adopted by the ICAO reflect the improvements in the manufacture of aircraft engines while evaluating the effectiveness of newly developed materials, i.e. sound absorbing materials designed to reduce the noise levels of existing aircraft engines. However, promulgating noise standards demands that a similar degree of importance be attached to the "technical and operational constraints which noise abatement can induce upon aircraft performance."¹⁹

Although doubts about the role of the ICAO in coordinating uniform standards for quieter skies ought not be entertained, the persuasive nature of standards and recommended practices in Annex 16 weakens the international regulatory framework not only as to aircraft noise, but also as to other air transport issues. The standards need to be reinforced by legally binding measures. Unless facilitated by the relevant constitutional framework or a high degree of willingness exists to incorporate them into domestic law, failure to utilize the standards carries no real sanction. The inadequacy of leaving the responsibility solely to an international institution is evident. To that end, however, the effectiveness of ICAO standards and recommended practices is greatly reinforced in two ways. First, the EC adopting those standards in the form of Community legislation binds Member States and to an interesting extent, non-EC countries. Second, enacted national measures incorporate those standards and recommended practices into domestic law. Thus, the difficulty stemming from the legal weakness of ICAO measures pales into insignificance.

IV. THE ROLE OF THE EUROPEAN COMMUNITY

To examine the role of the EC on matters relating to the environment generally requires a very detailed and lengthy discussion which is beyond the scope of this article. For its limited worth, the policy reasons underlying the actions taken or proposed relating to aircraft noise will be outlined. From this, it is hoped that the role of the EC in regulating aircraft noise, as part of its environmental protection programme, will grad-

19. ICAO, *supra* note 17.

ually emerge so that the basis upon which the subsequent legislation on aircraft noise is enacted can be better understood. Reference to the programmes of action of the EC is important because very little policy information can be extracted in the founding treaty. Indeed, the word "environment" is not mentioned in the Treaty of Rome²⁰ which means no legal base for Community actions on the environment exists. Consequently, the approach to the development of environmental policies must be cautious. However, this need for caution has since been avoided by the enactment of the Single European Act of 1986.

In 1973, the first EC programme of action on the environment was adopted. *Inter alia*, it noted that "[a] global environmental policy is only possible on the basis of new, more efficient forms of international co-operation which take into account both world ecological correlations and the interdependence of the economies of the world."²¹ It also specifically recognised noise as a source of harm to individuals and their environment.²² Four subsequent action programmes have been formulated and together they set out a number of leading principles relating to the environment:²³

- (i) prevention and protection of nature and natural resources from significant damage;
- (ii) priority consideration, so that environmental issues can be addressed as early as possible in the decision-making process;
- (iii) liability at source, so that polluter will pay; respect and mutuality, whereby activities of one Member State should not damage the environment of another and that negotiations must have proper regard to relations with developing nations;
- (iv) internationalisation of the Community's role by joint efforts and cooperation; division of responsibility between the Community and individual Member States according to the types of pollution; and
- (v) education, in order to promote greater awareness of environmental importance.

These general principles regarding the need for coordination on environmental issues and noise as an environmental problem combined with specific acknowledgement of aircraft noise as a sufficiently serious source of such noise led to the enactment, in December 1979, of the first of four directives that utilised ICAO standards limiting aircraft noise emissions.

20. Treaty Establishing the European Economic Community (Treaty of Rome), March 25, 1957, 298 U.N.T.S. 3. The initial signatory countries were: Belgium, France, the Federal Republic of Germany, Italy, Luxembourg and the Netherlands.

21. 1973 O.J. (C 112) 1, at 7.

22. *Id.* at 8.

23. 1977 O.J. (C 139) 1; 1983 O.J. (C 46) 1; 1987 O.J. (C 70) 3; COM(92) 23 (18.03.1992).

A. EUROPEAN LAW ON AIRCRAFT NOISE: THE DIRECTIVES

European legislation with regard to air transport has been a comparatively recent development due to the diverse political and economic factors which presented particular difficulties in this area.²⁴ Today, the increasing role of the EC in air transport has expanded from economic and safety regulation to environmental regulation including noise emission standards. In this regard, four European directives²⁵ resulted in a duty being placed on Member States to ensure that subsonic aircraft of a civil nature registered in Member States comply with certain requirements stated in Volume 1 of Annex 16. The directives, on the other hand, do grant certain exemptions. What follows is a cursory look at the important provisions of the directives, some of which will be necessarily technical but unavoidable in order to set the agenda for a subsequent analysis of the difficulties raised by some of the provisions.

1. *First Directive*

Council Directive 80/51 was adopted in 1979 and aims to limit noise emissions from subsonic aircraft.²⁶ Subject to certain exemptions, it expressly prohibits Member States from certifying an aircraft registered in their territory unless that aircraft complies with certain requirements stated in Annex 16, and in particular those specified in Chapters 2 and 3. In addition, it requires that all civil propeller-driven aircraft with a maximum certified take-off weight under 5700 kilograms and all civil subsonic jet aircraft not falling within Annex 16 to be successfully registered and comply with standards at least equivalent to those in Chapter 2 of Annex 16 to the Convention. Certain exemptions are allowed if propeller-driven planes are only flown in the territory of Member States or in the territory of Member States that have given consent. Further, limited exemptions are noted in Article 4 including a discretion for Member States to allow "aircraft of historic interest" to be registered without complying with the stated standards.

The Directive also set a deadline to phase out by December 31, 1986 all civil subsonic jet aircraft with a take-off weight exceeding twenty tons unless they attained standards at least equal to those contained in Chapter 2 of the Annex.

24. For instance, no legislation on air transport competition within the EC was introduced until 30 years after the Treaty of Rome was concluded in 1957; see Jeffrey Goh, *Regulating the Skies of Europe: Air Transport Competition* 27 EUR. TRANSP. L. 295 (1992).

25. A Directive is defined in Article 189 of the Treaty of Rome as "binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of forms and methods." See *supra* note 20.

26. 80/51/EEC 1979 O.J. (L 18) 26.

2. *Second Directive*

The second directive, namely Council Directive 83/206,²⁷ amended the 1979 Directive in the light of amendments made to Annex 16 by the ICAO which came into force in November, 1981. This directive specifically stated that Member States should not allow civil subsonic jet aircraft registered outside the EC to land in their territory after January 1, 1988 unless those aircraft also complied with the noise emission standards as set out in Chapter 2. Chapter 2 provisions, although subject to certain temporary exemptions which had to expire by December 31, 1989 and which accounted for "economic" and "technical impossibility," represented a significant increase in the levels of control to be exercised by Member States regarding aircraft noise and aircraft *not* registered within the EC. The 1979 Directive had merely indicated that Member States should "endeavour" to ensure non-EC registered aircraft complied with international standards. In this respect it is obvious that the imposition of Community obligations on Member States indirectly obligates non-EC countries to also comply with EC and hence international standards. To ignore compliance would lead to the withdrawal of permission to land within the Community. This is significant given the different questions raised as to sovereignty and control of non-EC airlines. The question of unfair international trade also dominates since older aircraft are commonly purchased or leased for use by the airlines of third world or developing nations. Nevertheless, in practice, few problems arise since international noise standards are formulated as a result of wide-ranging agreement among ICAO signatories and EC measures generally mirror those adopted by the ICAO. At any rate, such EC measures are a product of political compromise between Member States which dealt with their existing obligations under their non-EC air service agreements. Be that as it may, not every airline flying into the Community is a signatory to the Chicago Convention nor will every decision by the EC always reflect the unanimous agreement of every Member State.

In air transport, since 1986, Article 84(2) of the Treaty of Rome has provided that decisions may be made by majority vote. In such cases, the regulatory problems beyond national frontiers are most acute.

3. *Third Directive*

The third Council Directive, adopted in 1989, represented yet a further step in the progression to more stringent controls.²⁸ In language mirroring that first used in the 1979 Directive, the preamble notes the need for "aircraft noise [to be] further reduced, taking into account envi-

27. 83/206/EEC 1981 O.J. (L 117) 15.

28. 89/629/EEC 1989 O.J. (L 363) 27.

ronmental factors, technical feasibility and economic consequences.”²⁹ It also notes the need for increased investment in “the latest and quietest aeroplanes available” and states in Article 2 that Member States may not allow registered civil subsonic jet aircraft to fly in their country or in the other countries of the EC unless they comply with noise standards at least as high as those required by Chapter 3 of Annex 16 after November 1, 1990. In effect, all aircraft registered within the EC after November 1, 1990 must comply with the standards set according to their particular classification stipulated in Chapter 3, whether they will be used for air services within or without the EC. The application of standards in Chapter 3 represents a stronger level of control than was previously applicable under the Chapter 2 regime.

Certain exemptions inevitably had to be provided, the most important of which is found in Article 5. This Article enables Member States to grant exemptions for aircraft both leased from non-EC countries on a short term basis and to operators who can show that their pursuits would otherwise be “adversely affected to an unreasonable extent.” The difficulty is establishing the extent to which the airline concerned has been affected. No parameters define the meaning of “unreasonable extent.” These exemptions reflect the potential hardship which may be suffered by certain airlines, particularly small commercial carriers, if the standards introduced are not phased in as part of long-term plans. However, Article 5 exemptions must expire on December 31, 1995 when it is expected that the extent of the adverse or unreasonable affect on airlines will be marginal.

4. *Fourth Directive*

The 1989 Directive was a first step along a path to ensure that all aircraft comply with the standards in Chapter 3 of Annex 16 to the Convention. Further measures were subsequently adopted in 1990 by the ICAO laying down the grounds for the eventual prohibition of all aircraft that merely complied with Chapter 2 standards. These measures are now contained in the most recent EC directive, Council Directive 92/14.³⁰ The aim of this Fourth Directive is to “phase out Chapter 2 aircraft which are regarded as unacceptably noisy, over a number of years.”³¹ Article 2 stipulates all aircraft, whether EC registered or not, with a maximum take-off weight of or exceeding thirty-four tons and the potential to accommodate more than nineteen passengers (excluding crew) must not operate in a Member State’s territory after April 1, 1995 unless they meet either

29. *Id.*

30. 92/14/EEC 1990 O.J. (L 76) 21.

31. Opinion of the Economic and Social Committee, 1992 O.J. (C 339) 89.

Chapter 3 standards or those in Chapter 2, provided the certificate regulating the ability of such aircraft to fly was given less than twenty-five years ago.³² In simpler terms, aircraft which were certified before 1970 will be prohibited from flying in the EC. From April 1, 2002, however, the Directive requires via Article 2(2) that all aircraft comply with Chapter 3 standards; an effective end to the exemption contained in the proviso.

As in the previous directives, certain exemptions can be granted; several are worthy of further consideration since they raise not merely EC, but extra-Community, implications. These include aircraft from developing nations and other aircraft. Aircraft belonging to airlines from developing nations, listed in the Annex to the Directive, are exempt from Articles 2(1)(a) and 2(1)(b).³³ Such aircraft must however: 1) comply with Chapter 2 standards; 2) have "operated into Community airports in a twelve (12) month reference period between 1986 and 1990 selected in conjunction with the States concerned;" and 3) have been registered in those developing countries referred to in the Directive Annex within the reference period *and* continue to be "operated by natural or legal persons established in those countries."³⁴ In practice, developing nations in the Annex can choose, in consultation with a Member State, a twelve month period between 1986 and 1990 regarding the use of this exemption. The developing nation in question presumably would wish to adopt a reference year during which as many of its airlines' aircraft as possible fell within the terms of the exemption and whose individual airworthiness certificates were issued more than twenty-five years before the time the exemption is applied for, since Article 2(1)(a) and (b) do not apply to such aircraft. It is the aircraft which airworthiness certificates were granted more than twenty-five years ago that will benefit from these provisions, provided of course they comply with the other terms of the exemption. But this exemption does not override the provisions in Article 2(2) and therefore, airlines, despite being referred to in the Annex, will not be allowed to operate unless they comply with standards in Chapter 3 from April 1, 2002 forward.

The exemption acknowledges that the adaptation of aircraft places an economic burden on all airlines, particularly on airlines from developing nations. Affordability in most instances dictates that purchases or leases of aircraft should be restricted to older and hence noisier aircraft. If forced to comply with the general time scale, such airlines may cease to

32. Articles 2(1)(a) and 2(1)(b).

33. Examples of airlines of developing nations listed in the Annex are: (i) Air Algerie (Algeria); (ii) Egypt Air (Egypt); (iii) Royal Air Maroc (Morocco); and (iv) Air Zimbabwe (Zimbabwe).

34. Article 3(a) and (b).

operate at a time when their operations are regarded as vital to the economy of their countries of origin. The existence of this exemption also underlines the fact that the Directive not only has implications for airlines within the EC but also for extraterritorial airlines. The enforcement of the Directive within the EC will force non-EC states to comply with EC as well as international standards, unless an exemption application is successful. The crucial aspect in this regard is the principle of mutuality in air transport relations between individual Member States and non-EC countries which are governed by the system of bilateral agreements. Since national interests still pervade the EC, there is every incentive on the part of individual Member States to maintain existing agreements to the fullest extent permitted by EC law. If the air traffic rights of the foreign carrier are withdrawn for reason of non-compliance with EC noise Directives, the bilateral system enables the foreign government to similarly withdraw existing reciprocal air traffic rights of an EC carrier; the consequence of this exchange are too obvious to require further exploration for present purposes.

Additionally, Article 4 allows for exemptions to the twenty-five year term specified in Article 2(1)(b) for all aircraft for a period not exceeding three years, if the airline in question is placed in a position where "the pursuit of its operations would otherwise be adversely affected to an unreasonable extent." It is suggested that this exemption is a recognition of the technical difficulties involved in making the appropriate changes to aircraft and the need for certain airlines to adapt over a more relaxed time period as part of a long term investment strategy or risk going out of business. This, it is submitted, is an important provision on a point already raised relating to the obligations that may be imposed indirectly on non-EC countries because it limits potential objections that these countries may raise.

B. AN OVERVIEW

The approach of adopting and implementing the ICAO standards by the EC has been a consistent characteristic of the Directives. If one understands the EC legislation on aircraft noise, there must be an appreciation of the categorisations of aircraft formulated by the ICAO, specifically those of Chapters 2 and 3 of Annex 16. The aim of the four EC Directives ensures compliance of aircraft registered in Member States with international standards. A duty is placed on Member States to enact legislation limiting the issuance of noise certificates to those in compliance with the specified standards. The Directives are progressive in the sense that each subsequent directive imposes higher standards of noise control and aims at ensuring compliance with a view toward bringing about the gradual phasing out of aircraft that fall below the higher noise

level and internationally accepted requirements. If an aircraft fails to comply with noise level standards, it will not be granted a certificate by a Member State. As a result, it will not be able to land, take-off or fly over the territory of Member States. Airlines are therefore required to ensure their aircraft comply with standards laid down in the Directives.

Other common themes can also be identified from the four Directives, particularly regarding compliance with the applicable standards required within reasonable time scales and exemptions granted by Member States in certain special circumstances.

V. IMPLEMENTATION AND ENFORCEMENT

It is vital to the Community's aim of uniform provision regarding aircraft noise standards that Member States comply with their obligations and, on the whole, most have fulfilled such duties.³⁵ Failure to comply with those obligations, however, is potentially liable to two forms of enforcement action.

A. COMPLIANCE BY MEMBER STATES: ARTICLE 169

Article 169 of the Treaty of Rome provides a mechanism by which the Commission can take action against a Member State if it considers such State to have failed to fulfil its Treaty obligations.³⁶ Since these aircraft noise measures are "directives," they clearly place Member States under an obligation to implement "as to the result to be achieved" and lack of compliance in this regard could render a Member State subject to an action under Article 169. The *locus standi* for an Article 169 action is conferred only on the Commission although it is common for individuals to prevail on the Commission to initiate an Article 169 action. If the Commission considers a Member State to have not fulfilled its obligations, the Commission, after providing the State concerned with the opportunity to submit its own point of view, will deliver a reasoned opinion. A failure to comply with the terms of the reasoned opinion may result in the matter being brought before the European Court of Justice (ECJ). At this stage, interim measures can be sought by the Commission and granted by the ECJ pursuant to Article 186.³⁷

35. For a tabulated analysis of the history of compliance, see Peter Davies and Jeffrey Goh, *EC Law on Aircraft Noise: Recent Developments* EUR. ENVTL. L. REV. 229 (1993).

36. Article 169 provides that:

[i]f the Commission considers that a Member State has failed to fulfill an obligation under this Treaty, it shall deliver a reasoned opinion on the matter after giving the State concerned the opportunity to submit its observations. If the State concerned does not comply with the opinion within the period laid down by the Commission the latter may bring the matter before the Court of Justice.

37. Article 186 states "[t]he Court of Justice may in any cases before it prescribe any necessary interim measures."

Effective as it may seem, the Article 169 procedure is not without its limitations. First, and in particular, the decision to initiate Article 169 proceedings is discretionary although mandamus could be sought against the Commission for failure to perform a duty under the Treaty.³⁸ Further, and notwithstanding that a reasoned opinion has been issued, the Commission may decide not to commence legal proceedings for a variety of reasons. Most relevant in this context is the political complexion of air transport within the EC. The protectionist tendencies of Member States in respect to this sector often will be a consideration of relative importance despite the purported role of the Commission as “the guardian of the Treaty.” In practice, therefore, it is common to detect an aura of informality in seeking such compliance. The Commission often allows a reasonable period for the implementation of the Directives after considering various items including the legislative time-table of Member States, the availability of relevant personnel at a particular time and so on. In the case of the 1992 Directive, for instance, Article 10 states that Member States were under a duty to “bring into force the laws, regulations and administrative provisions necessary to comply with this Directive before July 1, 1992.” However, it was agreed that the period for national implementation would be extended to July 1, 1993 to allow Member States more time to incorporate the Directive into their national law since the Directive was greatly delayed in coming into force. Any infraction would not have attracted proceedings by the Commission.

A second limitation relates to the technical nature of aircraft noise standards. Often members of the public find it difficult to decide whether an infringement took place. Hence, the limited possibilities and strength of individual representation to the Commission for an Article 169 action sink into greater oblivion. While the absence of *prima facie* evidence does not bar the Commission’s consideration of a matter, given that proceedings under this Article can take up to a year to conclude, it is generally true an enforcement action requires, as a pre-condition, cogent evidence. The difficulty with monitoring compliance to a large extent is mitigated by the regulatory approach adopted under EC law. What exists is no more than a broad framework stipulating the standards. National authorities often play a more prominent role since, commonly, national legislation incorporates the Directives to vest the regulatory function of aircraft noise monitoring on the appropriate authorities. Furthermore, this fits with the principle of dividing responsibility between the EC and Member States according to the type of environmental problem and according to the level at which the problem can be dealt with most

38. Article 175 provides that Member States and other institutions of the Community may seek bring action against the Council or Commission for failure to act. See Case 13/83, *European Parliament v. Commission and Council*, 1985 E.C.R. 1513, 1 C.M.L.R. 13 (1985).

appropriately.³⁹

B. COMPLIANCE BY MEMBER STATES: INDIVIDUAL ACTION AND DAMAGES

A more effective way for an individual to enforce EC rights is to rely on the "direct effectiveness" of EC legislation enabling an individual to seek enforcement of rights arising from that legislation in national courts. This judicially-created concept was first delivered in a landmark decision by the ECJ in 1962.⁴⁰ It is, however, subject to a number of conditions:

- (i) The legislation in question must be clear and unambiguous in its intention to confer rights on individuals.
- (ii) There must be an unconditional conferral of the right.
- (iii) The measure must not be dependent on any further action being taken by the Member State.⁴¹

It is possible that none of the four Directives are likely to fulfil such requirements particularly since the Directives allow Member States to grant exemptions in certain situations, thereby rendering some provisions conditional. Additionally, the Directives are regulatory and one would be hard-pressed to search for any unconditional conferment of a right. Regardless, the Directives require implementation by Member States and authority exists suggesting that such a condition would be fulfilled if the implementation date has lapsed.⁴²

Since the significant case of *Francovich v. Italian State*,⁴³ however, it is submitted that even if the four directives in question are not directly effective, an individual suffering some loss as a result of the Member State's failure to fulfil its obligations with regard to noise standards in the EC may well be in a position to make the Member State liable for damages. The principle enunciated by *Francovich* enables an individual to seek compensation in respect of the failure by the Member State to fulfil its Treaty obligation of implementing Community legislation, provided that the following can be established:

- (i) The individual must prove that the legislation in question seeks to es-

39. *Supra* note 20.

40. Case 26/62, *Van Gend en Loos v. Nederlandse Administratie der Belastingen*, 1963 E.C.R. 1. See also Case 41/74, *Van Duyn v. Home Office*, 1974 E.C.R. 1337, 1 C.M.L.R. 1 (1974). Note further that the direct effect concept applies to Directives only in respect to "vertical" bodies, that is, "organisations or bodies which were subject to the authority or control of the State or had special powers beyond those which result from the normal rules applicable to relations between individuals." Case 188/89, *Foster v. British Gas p.l.c.*, 3 C.M.L.R. 833, 856-857 (1990).

41. Case 26/62, *Van Gend en Loos v. Nederlandse Administratie der Belastingen*.

42. Case 148/78, *Publico Ministero v. Ratti*, 1979 E.C.R. 1629, 1 C.M.L.R. 96 (1980).

43. Cases 6/90 and 9/90, 1992 I.R.L.R. 84.

establish individual rights. Thus, for instance, this condition might be satisfied if a member of the public living in close proximity to an airport or under the flight path could demonstrate that the Directives in question aimed at establishing rights for such individuals since they are arguably the primary beneficiary of the tightening of aircraft noise standards - the sociological concept of environmental pollution.⁴⁴

- (ii) The detail of such rights must be apparent from the legislation. Whether the right must be explicit or implied is not clear. Both may be acceptable approaches based on the jurisprudence of the ECJ. If it can be successfully demonstrated that the aircraft noise legislation seeks to provide a better environment, then compliance with certain standards prior to airworthiness certification may be translated to a right of the individual against adverse sociological pollution. An individual's right to enjoy an environment where certain noise standards are not breached must be implied from the Directives.
- (iii) There must be a causal link between the infringement by the Member State with regard to implementation (or lack of it) and the damage incurred by the individual. This is essentially a factual requirement, though clearly the notion of damage implies a predetermined or pre-existing right. A causal link may exist if, for instance, the individual's loss from a subsequent decrease in the value of any property owned where such decrease was caused by noise levels exceeding those laid down in the EC legislation, might have directly resulted from the failure of the Member State to implement the EC noise standards.

An Article 169 action may not be required to establish infringement on the part of a Member State where such State clearly failed to implement the Directives on noise standards. Where no legislation in that State imposes standards at least equivalent to those required by EC legislation, the State clearly fails to meet its Treaty obligations when the relevant compliance date in the Directive has passed. In such a case, the *Francovich* principle allows an individual to seek compensation in national courts without requiring a recourse to the Article 169 procedure.

However, the consequences of the *Francovich* case remain unclear. The ECJ indicated that the legal liability of the State would be based on that State's own national law.⁴⁵ Therefore, what types of loss would be recoverable are undefined. The decision does encourage Member States to fulfil their implementation obligations with regard not only to legislation that is directly effective but also to legislation with indirect effects.

44. *Id.* The point has already been made relating to the entitlement to a reasonably clean and healthy environment as a human right, though the tri-partite correlation between aircraft noise, the environment and human rights in the legislation still needs to be elaborated.

45. *Supra* note 43.

C. PROTECTION AGAINST AIRCRAFT NOISE UNDER THE EUROPEAN CONVENTION OF HUMAN RIGHTS

In a separate but highly relevant European development, an individual may also challenge the interference of aircraft noise as an invasion of a person's right to privacy and enjoyment of property rights under the European Convention on Human Rights (ECHR Convention).⁴⁶ In 1987, an application was submitted by two residents in the vicinity of London's Heathrow Airport to the European Commission of Human Rights (ECHR Commission) claiming that the noise levels at the airport violated their rights as provided for by the ECHR Convention in Articles 6(1), 8, 13, and Article 1 of Protocol 1 to the Convention.⁴⁷ The ECHR Commission rejected the applicants' claims under Articles 6(1), 8, and Article 1 of Protocol 1 as manifestly ill-founded and therefore refused admissibility of their cases.⁴⁸ The ECHR Commission appeared to have been driven by the consideration that the interference with their private lives and property rights was necessary in a democratic society for the economic well-being of the country. Additionally, the Commission has been influenced by the fact that the Airport had taken some significant measures, i.e. the purchase of properties affected and the restrictions on air traffic during the night, to deal with the noise resulting from expansion. The crucial question was whether the Government had exceeded its margin for development when balanced against the interests of particular individuals. To resolve the question, the ECHR Commission had to invoke the principle of proportionality. On the issue of effective national remedy as required by Article 13, the ECHR Commission held there had been no violation in respect of Article 6(1) or Article 1 of Protocol 1. The Commission also found that the first applicant's complaint relating to the lack of an effective remedy under Article 8, that is, interference with property rights, did not reveal any violation. The rationale for this decision derived from the fact that the first applicant resided in an area designated as low aircraft noise nuisance (35 Noise and Number Index - NNI Contour) with half a million other residents.

The position was, however, slightly different with respect to the second applicant whose property was located within the 60 NNI Contour, an area designated as affected with a greater noise level. Although his substantive claim under Article 8 was eventually rejected on balance of necessity, it was nevertheless an "arguable claim for the purposes of Article

46. The European Convention on Human Rights is a separate regime from the European Community. It was established under the auspices of the Council of Europe.

47. *Powell v. U.K.*, 9 Eur. Ct. H.R. (ser. A) at 241 (1987); *Rayner v. U.K.*, 9 Eur. Ct. H.R. (ser. A) at 375 (1987).

48. *Powell & Rayner v. U.K.*, 12 Eur. Ct. H.R. (ser. A) at 355 (1990).

13 of the Convention.”⁴⁹ Given the arguable character of the claim, it was then necessary for the ECHR Commission to determine whether the applicant had an effective remedy. It concluded by majority decision, after reviewing the remedies obtainable in the UK, that “none of these remedies could provide adequate redress” for the second applicant’s claim under Article 8 of the Convention.⁵⁰

When the case appeared before the European Court of Human Rights (ECHR Court), the court concluded that since the ECHR Commission ruled the complaints under Articles 6(1) and 8 inadmissible, there was no jurisdiction to entertain the complaints.⁵¹ As to the Article 13 claims, the ECHR Court agreed with the ECHR Commission that the first applicant had not been deprived of an effective remedy since the UK enjoys a wide margin of appreciation in adopting specific forms of measures. For the second applicant, however, the ECHR Court took a different view from the ECHR Commission and reached a conclusion similar to the one reached for the first applicant. No violation of Article 13 was found in the case of either applicant.

Although almost all the complaints were rejected by the ECHR Commission, and eventually by the ECHR Court, the significance of this case lies in the principle it has created, that is, the possibility of enforcing property rights affected by aircraft noise as an inherent human right. *Powell and Rayner* was the first instance when the issue of aircraft noise specifically was raised as a possible human right in the European context, although prior to this case, the relationship between the environment and human rights had been mooted with limited success.⁵² Furthermore, while provisions of the Convention or decisions of the ECHR Commission or Court may not be legally binding in some member countries, particularly the UK, there has been recognised the gradual infiltration of the principles entrenched in the Convention into the system of European Community Law by the ECJ. In a number of cases, the ECJ has made rulings in the light of provisions within the Convention. Thus, for instance, in *Johnston v. Chief Constable of Royal Ulster Constabulary*, the ECJ held that the “principles on which that Convention is based must be taken into consideration in Community law,” and the Equal Treatment Directive accordingly ensured that all persons concerned under it had a right to obtain an effective remedy in a competent court against measures contrary to the Directive; a right explicitly recognised by the

49. *Powell & Raynor*, 12 Eur. Ct. H.R. (ser. A) at 288, 295.

50. *Id.*

51. *Powell & Rayner*, 12 Eur. Ct. H.R. (ser. A) at 355.

52. For an introductory exposition in the European context of human rights, see Stefan Weber, *Environmental Information and the European Convention on Human Rights*, 12 HUM. RTS. L.J. 177 (1991).

Convention.⁵³

The foregoing discussion centered on the implementation of the Directives by Member States and the enforcement procedures for failing to do so. Where the default is on the part of the airline operator for failing to comply with the requirements laid down, enforcement is carried out by national authorities as envisaged by the Directives themselves. Non-compliance based on the EC measures will result in the withdrawal of permission to land within the Community, while non-compliance based on national legislation may lead to financial penalties and withdrawal of an operating license.

VI. CONCLUSIONS

Despite a slow start, aircraft noise has moved in a meteoric way to become one of the most important issues in air transportation. International, regional and national efforts exemplify the seriousness with which this matter has been embraced. The effectiveness of an international regulatory system is significantly reinforced by EC legislation where Member States (and also to the extent discussed, non-EC countries) are concerned and by national measures of signatories to the Chicago Convention. The consequences of the continuing importance being placed on controlling aircraft noise, whether through international rules or Community and national legal standards, have been the enactment of a multitude of measures of a varying nature.

The basis for EC legislation on the control and limitation of aircraft noise is two-fold. First, the four Directives were introduced against the backdrop of the international standards adopted by the ICAO. Most, if not all, of the requirements in these Directives mirror those provided for by Annex 16 of the Chicago Convention. Second, these Directives arose from the wider environmental protection programme of the EC. The coincidence in terms of emphasis represents an extended implementational process on the control of aircraft noise since Member States are legally bound by EC legislation. Quite apart from the difference in the status of international rules and EC legislation in Member States, the stricter deadlines set by the EC are yet another difference in spite of the coincidence in the introduction of EC aircraft noise measures.

Perhaps it is safe to hypothesise that in the absence of any international rules, the transport and environmental policies of the EC neverthe-

53. Case 222/84, 1986 E.C.R. 1651, 3 C.M.L.R. 240, 262 (1986). See also Case 36/75, *Rutili v. Minister of the Interior*, 1975 E.C.R. 1219, 1 C.M.L.R. 140 (9175); Case 249/86, *Re: Housing of Migrant Workers: EC Comm'n v. Germany*, 1989 E.C.R. 1263, 3 C.M.L.R. 540 (1990); Case 63/83, *R. v. Kirk*, 1984 E.C.R. 2689, 3 C.M.C.R. 522 (1984). The Single European Act states further in its preamble the goal of "work[ing] together to promote democracy on the basis of the fundamental rights recognised in the Convention."

less will be taken with all seriousness to prepare for the ultimate European union. Yet, at the same time, the rigour with which the EC measures are to be implemented cannot be oblivious to the international effects the process creates. The shift from the second Directive to the fourth Directive in terms of granting exemptions to developing countries is a useful illustration in this regard. For the system of international air transport to function effectively and efficiently, measures such as these must not ignore the implications and difficulties transcending national boundaries. International air transport is still characterised by contracts and agreements requiring respect for the obligations and rights of the others. Inevitably, discretion had to be written into the fourth Directive to safeguard the interests of airlines that could be adversely affected by implementation of the EC aircraft noise measures.

These latter points are indicative of the political overtones in matters related to air transport. However much the virtues of environmental protection against aircraft noise may be extolled, at the end of the day they must be weighed against economic factors such as the pursuit of "environmental friendliness" to ensure that no undue burden is imposed on aircraft operators or airport proprietors. The need for global competitiveness prohibits such an imposition. A recent report by the Committee of Wise Men, when asked to inquire into the competitiveness of the European air transport industry, summarised succinctly the need for this delicate balancing exercise, garnished with an implicit reference to the idea of sovereignty that has characterised so much the system of international air transport. The Committee report stated:

The introduction of separate, more stringent European noise standards would result in increased costs to European airlines and put them at a unilateral economic disadvantage against their global competitors. Moreover, the benefits, because of the noise . . . inequalities of the world's airline fleets, would be only marginal at Europe's busiest airports which must continue to accept aircraft from all over the world.⁵⁴

These observations are largely premised on the inevitable fact that no possibility exists for aircraft noise to be eliminated completely. But a great deal could be done to minimise its disturbance, whether by effective planning controls to prevent inward developments toward an airport or by encouraging improvements in technology for the production of quieter aircraft engines. No doubt, as air transport technology improves, higher standards would be achieved, and indeed expected. Quieter aircraft and aircraft engines would be produced as a matter of logical progression. The investment in and the usage of these, however, will need to be complemented by a legal framework to ensure that airline operators continue

54. COMITÉ DES SAGES, *EXPANDING HORIZONS* 40 (1994).

to recognise the need for environmentally acceptable standards of aircraft noise. The marketplace is no suitable substitute. But, at the same time, the polycentric nature of regulatory decisions in air transport require proper regard for potential adverse effects at the intra-territorial level as well as the extra-territorial level. Above all else though, the flame signifying its importance, whether as an environmental concern *per se* or as a species of human rights, must be kept burning to ensure continuous efforts for advancements in air transportation while at the same time bettering the quality of life. The deeper the recognition of this important need, the less complicated the resulting regulatory issues that transcend national frontiers.