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CONSEQUENCES OF SLOT TRANSACTIONS ON AIRPORT CONGESTION AND ENVIRONMENTAL PROTECTION

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ABSTRACT

Recent trends in the liberalization of market access by many commercial airlines have opened the skies to virtually unlimited flights between many countries. However, this liberalization is stultified by the lack of airport capacity to accommodate the many flights that are generated by demand for capacity. Accordingly, the allocation of slots for open skies airlines remain dependent on the expansion and effective management of airport capacity. This article examines the ramifications of slot allocation on traffic peaking at airports and environmental concerns, which may emerge with this activity.

INTRODUCTION

Congestion of airports brings to bear the need to manage airport capacity more efficiently in order to meet the increasing demand for air transport. Whether this is achieved by increasing airport capacity or utilizing available capacity more efficiently, the inevitable increase in air traffic the world is facing will result in the need to manage effectively the allocation of slots at airports and the protection of the environment.

A recent ruling of a high court in the United Kingdom, to the effect that airlines could exchange slot times of arrival and departure at airports, even if such exchange involved a financial transaction. This ruling puts into perspective the growing issue as to whether slots are the property of airlines once they are awarded to them, or whether they are merely allocated rights and therefore are not real property rights which are susceptible to being alienated in a legal sense. The court in this instance said that British Airways, with 37 percent of 441,000 slots used at London Heathrow airports, legitimately

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exchanged slot times at Heathrow with KLM, the Dutch carrier, even if a payment was involved in the exchange transaction.[1]

Recent trends in the liberalization of market access by many commercial airlines have opened the skies to virtually unlimited flights between many countries. However, this liberalization is stultified by the lack of airport capacity to accommodate the many flights that are generated by demand for capacity. Accordingly, the allocation of slots for open skies airlines remain dependent on the expansion and effective management of airport capacity. This article examines the ramifications of slot allocation on traffic peaking at airports and environmental concerns, which may emerge with this activity.

The International Civil Aviation Organization (ICAO) has been addressing the issue of traffic peaks at international airports since 1973. In June 1975, the Secretary General of ICAO established a Study Group on Traffic Peaks at International Airports (TRAP Study Group), which held two sessions between October 1976 and August 1977. The group was charged with undertaking studies of the traffic peaking situations (current or recent) at a limited number of international airports, the aim being to establish the facts and experiences associated with those situations as fully as possible and thereby facilitate the formulations of guidance and other international action helpful in attacking such situations when they arise. The study group was also required to identify to the extent possible from the studies, as well as from other related experience and information available to the group, such elements as were sufficiently typical to enable it to formulate conclusions and guidance of general applicability, and to develop recommendations as to:

a) specific guidance of general applicability that would be of assistance in combating peaking problems; and

b) any other international action that the group believed ICAO might usefully consider taking in the matter.[2]

The airports selected for the study were Sydney, Copenhagen, Frankfurt, Cairo, Nairobi, New York/J.F. Kennedy, Toronto, Caracas/Maiguetia, Bordeaux, Marselles, London/Heathrwo, Prestwick, Hong Kong, and Bombay. Based on results of the questionnaire sent by ICAO to the states concerned, the study group concluded that, at the time, the severity of passenger peaking (as measured by the average to peak hour ratios) was greatest at Bordeaux and Prestwick (with ratios below 5 percent) followed by Marseilles, Bombay, Sydney, London/Heathrow (long-haul—terminal 3) and Caracas/Maguetia (with ratios in the 10 to 18 percent range).[3] The group also found that, in light of the responses from states received, the utilization of passenger facilities was, in general, substantially below that achieved for aircraft movement facilities, when taking the ratios of average-hour to peak-hour traffic as broad

indicators of overall utilization at various airports.[4]

The factors significantly contributing to peaking were preference for travel at certain times of the day rather that certain times of the year and the influence of seasonal fares on the market, which, although creating peaks of their own, were considered beneficial on an overall perspective, in that they widened the spread of traffic throughout the year and thereby decelerated growth of the summer traffic peak.

The effect of wide-body aircraft, which were relatively new at that time, was a mixed-bag. While several airports considered that wide-body aircraft contributed significantly to peaking, it was evident that in spite of the spatial problem created by these aircraft in the apron and terminal areas, the aircraft delayed runway saturation. Thereby the usually more costly development work associated with runway expansion was deferred.

The problems brought about by attendant commercial arrangements such as interlining and transiting of passengers were of a somewhat different dimension, in that the demand for increased terminal capacity, gate-lounge space, increase of baggage capacity with regard to baggage handling, directly brought to bear several complex facilitation problems at airports at peak times. These same problems would emerge from such practices as optimization of aircraft utilization and carrier competition.

Curfews imposed on aircraft, calculated to obviate peaking problems, were found to be counterproductive in that they tended not only to result in a loss of revenue to activities and airports, but also to transfer aircraft to already busy airports aggravating the peak problems experienced therein, while creating peaking problems for not so busy airports at given times, which had to take in diverted aircraft from curfew affected airports.

Another factor that adversely affected airport congestion was found to be incompetent governmental controls at departure and arrival gates, which created facilitation problems at the terminals.

The group was of the view that there were two ways in which to ameliorate the peaking problem at airports:

a) seek ways in which to accommodate the peaks, or

b) handle the problem by efficient management of traffic flow.

The first measure was found to be proactive when considering the service rendered to a rapidly evolving and developing air transport industry and the complex needs of a wider traveling public. The inevitable recommendations from the study group related to the expansion of physical facilities at airports and aerodromes, more effective use of existing resources and more efficient application of handling procedures. Fundamental to accommodating peaking trends, however, was the need at every airport for a cost-benefit analysis

of peaking, wherein the costs increased additionally by accommodating peaks could be assessed against benefits brought about by the addition of capacity.

On the issue of management of traffic flows at airports, the group noted the usefulness of scheduling committees in the situation where amelioration of peaking needs to be sought through the management of traffic flow, and recommended that where such situations existed their establishment should be considered at least by the more important airports. The procedure seen as being most suitable would be for airport management to decide on the overall capacity to be allocated to commercial operators, and thereafter leave the scheduling committee to allocate that capacity, since being comprised of airlines concerned, it would be best informed as to their individual circumstances and requirements. The Internation Air Transport Association's (IATA) support for the recommendation was qualified to the extent that the establishment of a scheduling committee should normally only be necessary when the costs involved in expanding facilities were completely unacceptable, or for the period during which such expansion was proceeding.

The group noted that the airlines in particular, through IATA, had been active in the field of scheduling, but airports too were studying this subject in detail.

At many airports the national airline or, where there was more than one, the major national carrier acted as spokesman of the scheduling committee and also served as the channel through which the administration makes known the constraints applying to airport capacity. In this regard the group pointed out that it was important that all airlines, scheduled and non-scheduled alike, be given the same opportunity for making their requirements known, and be afforded the same treatment subject to the basic stipulation that they make their tentative schedules known well in advance. This last requirement had often proved difficult for charter airlines to meet and they were consequently often obliged to accept more inconvenient arrival and departure slots than the scheduled carriers.

It was also the group's observation that airport regulations and government regulations sometimes endeavoured to control peaking problems by ordering the transfer of certain categories of traffic (usually general aviation and charter flights) to other airports. The group understood that little existed in the form of legally enforceable regulations, and concluded that the main reason why such directives tended not be challenged was that it lay in the airlines own interest to see an orderly administration of traffic capacity even at the cost of penalties to certain categories of traffic. The group considered it important that in such circumstances all government regulations in this area should be equitable and fairly administered since they might otherwise have

the effect of inducing retaliatory action from other states which felt their airlines had been unfairly treated.

According to the study, surcharges on traffic movements during peak hours were only levied at two airports. The surcharges had only been in existence for a relatively short period and the group judged that there was no conclusive evidence as to whether or not they had proved effective in reducing peaks. It was recognized that small-aircraft movements might be most discouraged by such charges, but the group also saw the same effect being achieved through a pricing policy that set minimum charges at a high level.

For the peak surcharges to be effective, the group was of the view that surcharges would have to be incorporated into the fare structure in a manner whereby they could be passed on to the passengers using the airport at times when the surcharges applied, and even then a shift in travel away from peak hours could be expected only to the extent that demand was price-elastic. Incorporating surcharges in such a manner on a worldwide fare-construction basis would be difficult, but less so on a regional basis. Charter traffic on the other hand was recognized as a specific case where such charges could be directly passed on to the passenger. Turning to the broader aspects of the question of airport administrations employing their pricing policy to ameliorate pending problems, the group would emphasize that caution should be exercised in employing this tool, since airports more often than not are in a monopolistic position shielding them from the usual competitive forces that would enable the financial reasonableness and acceptability of changes in their pricing policy to be realistically assessed.

The effectiveness of airline pricing policy as a means of ameliorating peaking problems was something that the group found difficult to quantify in any precise terms. However, based on the experience with airline pricing to date, it was recognized that offering significant reductions from base fares during off-peak hours or periods had resulted in a spreading of traffic, and this in itself had caused peaking to be generally less severe that otherwise would have been the case. Since even new traffic resulting from normal growth was directed, in part, by such fares to off peak hours or periods. The group noted that such fares had principally affected the weekly peaking patterns, but there was also evidence of a change in the pattern within seasons.

The group also pointed to the feasibility of further educating the general public about airport-capacity shortages and the problems that arrive at peak-times of travel, with a view to achieving a better spread of demand over time. British Airports Authority was engaged in an advertising campaign to this effect that had already produced encouraging results. Also relevant in this context was the success achieved by the efforts made in the German Federal Republic to spread travel by staggering vacation periods and school holidays in different areas of the country. As originally conceived, this plan was seen

as a means to improve the utilization of highway system, but air transport also benefited from its application.

Apart from the several means of ameliorating peaking problems just discussed, the group also suggested that it could be useful for airports to review carefully the various factors contributing to peaking, those that may prompt ideas as to the kind of remedial action that may be most effective in the particular circumstances of any given airport.

Additionally, the group drew attention to the amelioration of peaking problems that may be secured through implementation of the Standards and Recommended Practices in Annex 9 – Facilitation to the Chicago Convention.

The ECAC Study

In March 1993, the European Civil Aviation Conference (ECAC) considered a report pertaining to a study on Modulated Airport Charges Against Airport Congestion: An Economic Way of Regulation[5] that focused exclusively on modulated charges as a deterrent to traffic peaking at airports. It reviewed some economic principles which were relevant to the analysis as to whether, *inter alia*, airport congestion on the airside could be minimized by the imposition of air navigation services charges and taxes. The conclusion of the study was that modulation of airport charges (passenger charges, landing and take-off charges) could be an effective way of dealing with congestion-prone airport facilities. The report hastened to add that scheduling committees and other short-dated strategic regulatory systems were not to be impinged, but that a long-dated solution (the imposition of changes) was considered desirable.

Initiatives of ICAO

The 27th Session of the ICAO Assembly in 1989 adopted Resolution A27-11 (Airport and Airspace Congestion) which directed the Council, when developing Standards and Recommended Practices for Air Navigation Services, to pay particular attention to their impact on airport and airspace capacity and to ensure effective coordination in order to avoid duplication of activities of other international organizations. At its 29th Session in 1994, the Assembly endorsed the Strategic Action Plan developed by ICAO that defined, *inter alia*, objectives[6] by ICAO concerning airport and airspace congestion and ways of achieving those objectives. ICAO objectives with respect to airside aspects of airport and airspace congestion can be defined as the following:

To develop measures for overcoming airport and airspace congestion on a global basis with the following objectives:

1. identify tasks within the competence of ICAO which can contribute significantly to easing airport and airspace congestion;
2. study possible solutions for alleviating congestion problems;
3. develop the overall ICAO action plan with objectives defined in the short-medium and long-term and assist states in its implementation; and
4. accelerate the development of systems and procedures for enhancing existing and airspace and promote the development of additional capacity

The Air Navigation Commission of ICAO, which undertook the task of formulating an action plan on airport and airspace congestion, examined factors such as the knock-on effect of airport curfews on scheduling international operations, particularly for long-haul flights; environmental restraints on airport arrival/departure flight paths; runway usage; airline hubbing; and recognition of new generation of quieter aircraft.[7] It was also concluded by the Commission that airport and airspace congestion was related to safety regulations and that, in the development of any technical or operational standards associated with enhancing capacity, due regard must be given to existing levels of safety. The Council of ICAO noted the report of the Air Navigation Commission and requested the Commission to keep the Council advised of further work conducted in the area of airport and airspace congestion.

There are compelling factors that any airport administration should take into account when planning for the injection of additional capacity. These are the responses of the international community in the form of Standards and Recommended Practices as promulgated by ICAO, in order that international civil aviation retains a certain consistence and uniformity in its global activity. For instance, ICAO has in use an Airport Planning Manual[8] in two parts, setting out in detail all aspects of airport planning. ICAO has in this document, developed a master planning process which involves plans, programmes and stringent policy that go to make airports adequate to meet the present and future air transportation needs of an area or state.[9] The manual starts from the fact that early aviation pioneers recognized the need for some public control of land in the vicinity of an airport[10] and bifurcates this need to reflect airport needs i.e. obstacle limitation areas and future airport development etc. and the need to ensure minimal interference with the environment and the public.[11] By this dual approach, ICAO has introduced a whole new area of thought into airport development. What was once a concern to merely

provide easy facilities for the fluid movement of air traffic has now become, in addition, an ecological concern. By this process, airport development now falls into three main areas:

a) the development of airport capacity and facilities;

b) the balancing of airport development with necessary security measures; and

c) the balancing of airport development with ecology, i.e., city planning, noise pollution avoidance, etc.

The ICAO Airport Planning Manual ensures a balance between airport development and ecological considerations.

In its findings, ICAO lists studies of air quality at certain large airports and nearby areas reflecting the fact that automobiles, airport ground vehicles and other urban pollution sources account for most of the atmospheric pollution[12] and that airports may destroy the natural habitat and feeding grounds of wildlife and may eradicate or deplete certain flora important to the ecological balance of the area.[13] Another ICAO document[14] establishes that bird hazards may be avoided if, in the process of planning an airport, migratory bird habits and bird migration routes are considered. The Airport Planning Manual also considers the necessity to avoid contamination or rivers and streams by airport waste disposal and drainage systems,[15] the avoidance of noise caused by aircraft to human habitation,[16] and highway planning.[17] It even considers revenue generation where airport lands not used for air transportation purposes may be used for agricultural[18] and recreational purposes.[19] Finally, the document calls for a detailed study of the impact of airport development on the environment in the form of an environmental impact statement.[20]

Ecological considerations of airport planning are considered in detail by ICAO in Annex 16 to the Chicago Convention. Annex 16[21] deals extensively with aircraft noise pollution in Volume I and with aircraft engine emissions in Volume II.[22] In these documents ICAO sets standards for noise evaluation measures for subsonic aircraft,[23] airworthiness requirements (noise) for supersonic aircraft[24] and the overall monitoring of noise,[25] aircraft smoke emissions,[26] gaseous emissions[27] and measurement techniques thereof.[28] The role of ICAO in the area of securing a harmonious balance between the gigantic strides made by aviation technology and the preservation of the environment has been one of responsibility. It is no mean task to pair off such interests as the economic development of international civil aviation, standard setting for meeting of challenges of the new decade and the next century and the problems of pollution caused by aircraft. In fact ICAO's endeavours at developing civil aviation in these areas go as far back as 1970 where a Special Committee on Aircraft Noise was created. This Committee published a

report[29] with futuristic prognoses of noise reduction. Other landmarks in ICAO history reflecting positive action taken on aircraft noise pollution are the Resolution on Aircraft Noise in the Vicinity of Airports passed at the Sixteenth Session of the ICAO Assembly in September 1968[30] and the two ICAO Resolutions[31] passed consequent to the Stockholm Declaration on the Human Environment.[32]

From the preceding paragraphs, one could glean that while the airport congestion problem is grave and that statistics throughout the world show alarming trends, much has been done to alleviate the problem. Many nations have already commenced contrived planning and in some cases even the implementation of such plans to accommodate the exodus of air traffic of the next decade and the next century. ICAO in the regulatory field and IATA in the operational field have so far abundantly shown their concern and indeed taken concrete action to meet the future challenge. The question now is what more needs to be done in the future and how should problems be approached? This question will be addressed later in this article.

Airport Planning Laws

On an examination of the foregoing discussion on airport congestion, no one could say that the problem has not been perceived so far, a *fortiori*. No one could even say that those responsible for the alleviation of the problem have not attempted to solve it. What now remains to be done is to examine the most proper manner in which to approach this problem in the coming decade and the next century. There is no doubt that the planners can take off from where we are at present. However, any future planning by individual states on the expansion of the airport programmes would have to be done with the primary consideration that, "Looking to the immediate future, air transport will require new forms of international co-operation in technical and economic areas."[33] The cooperation referred to in technical and economic areas would have to be further expanded to include security and ecological factors in the technical field and all economic research in city planning and infrastructure development in the economic field. These studies would have to be done in the form of committed and in-depth country studies by individual states taking into consideration futuristic studies of a country's outlook and the financial outlay that the country would be prepared to make for an airport expansion programme. The outcome of these studies could then form legislation for the planning of airports in a state. Such legislation would present, for the first time, a cohesive and enforceable set of laws in that state that would meet the airport congestion problem.

Guidelines for Drafting Laws

Although the concept of airport planning laws can be summed up easily in one paragraph about, the three broad areas of ecology, security, and infrastructure planning, there is a need for a sustained approach of study before such are incorporated into laws. For a start, ICAO's *Airport Planning Manual* is geared to provide information and guidance to those responsible for airport planning,[34] where information on a comprehensive list of planning subjects such as sizes and types of projects,[35] task identification,[36] preparation of manpower and cost budgets,[37] selection of consultants[38] and standard contract provisions[39] are given. With these guidelines, each state can start its planning process.

The first step to the planning process, which would eventually lead to the drafting of legislation, is to predict demand for each area and facet of the airport passenger and cargo terminal. Four basic steps have been suggested for this process. These are: the analysis of handling passengers, baggage, goods and mail in the terminal; the identification of optimum capacity levels; the coordination of research in futuristic studies; and, the laying of emphasis on areas that need more research in airport planning.[40] It is submitted that the last step serves as an appropriate culminating point of fact-finding in airport planning. The appropriate end to the ultimate planning process would then be to identify actual demands in quantifiable terms in order that regulations and laws could be drafted to ensure adequate supply for the demands.

Once the economic studies are completed, the final outcome of the process, i.e., the drafting of the laws, could begin its phase. At its first phase, the legal draftsman would have a preconceived set of ecological and security standards to fit into the overall economic picture. To fit in ecological and security aspects to the overall economic plan that would make the final airport planning laws, certain factors would have to be made available to the legal draftsman.

First, the planner should outline some critical facts that would be incorporated in the planning law together with substantiating facts and figures. They are the location of the area for the airport and its relation to the city and essential facilities, the location of facilities for the proposed airport or extension (such as fuel tanks, handling and supply access), aeronautical requirements, maintenance facilities and areas, passenger access and cargo areas, designing requirements of terminal buildings and noise mufflers in crucial areas.[41] These considerations would have to be specified in detail in order that the law unequivocally sets out the standards upon which an airport building or extension programme may be undertaken. Further, the requirements should be carefully blended to accord with minimum cost levels and maximum aesthetic standards both of which require skilled economists, engineers and

architects. These elements should then be incorporated into an overall airport system plan allowing for international and domestic air transportation. Major issues that may be considered in the introduction of planning laws are such facts as:

a) The relationship between airport and city. (Distance, access, communication links, etc.);

b) all personnel involved with airport operations would presumably live in close proximity to the planned airport;

c) all airport related industry and trading would be centered in the airport region;

d) all infrastructure, such as road transportation, shopping, schools and recreational facilities, would have to be provided for or planned for in order that b) and c) above are properly supported;

e) daily airport activities do not interfere with the existence of persons within the region of the airport.

In other words, ecological considerations should be considered closely with economic planning in order that environmental planning and facility planning be made interrelated.[42] At this stage, the draftsman of the planning law would have to be guided by environmental considerations that are specified by the planner. It is on this basis that the Swiss legislature has formally incorporated ICAO Annex 16 standards in their Ordinances[43] and the Singaporean Government has banned the issue of permits for schools, hospitals, and certain residential building in specified areas around the Changi Airport.[44]

Second, matters of aviation security concerning overall air transportation of a state as it affects the airport should be researched in detail. Although placed second in the planning process, this aspect of airport planning by no means is of less importance. Indeed, in the words of Dr. Assad Kotaite, President of the ICAO Council:

> In the absence of any international enforcement machinery, it is only for the sovereign states to safeguard that security by strict adherence to the internationally agreed rules and international morality. The security of international civil aviation is not a local or regional problem. It is a global problem of worldwide dimension. Furthermore, the security of international aviation is indivisible on the global scale and any local or regional arrangements are only as strong as the weakest link in the entire international community on a worldwide basis.[45]

The airport planner should find an excellent guide in Annex 17 to the Chicago Convention that is geared to safeguard international civil aviation against acts of unlawful interference. Procedures on all aspects of aviation

security are incorporated into this Annex and the overall airport plan could do well to include the recommendations therein for the consideration of the legislator.

Allocation of Slots

Slots are essentially times allocated to airlines to land and take off at international airports. Although airlines may claim that slots allocated to them over a sustained period of time are historic slots and thereby claim proprietary interest over those slots, airlines by no means own any slots in terms of being able to legally claim slots as a matter of course.

In September 1998, six unions representing 80,000 British airline workers vehemently objected to British Airways and American Airlines being paid for the 267 slots they were giving up at London Heathrow Airport as part of their transatlantic alliance. The six union aviation forum claimed that legally, since the slots are allocated, they couldn't be transacted for valuable consideration. Besides, the unions claimed, slot sales were bad for the air transport industry and may lead to the rise of airport charges and fees and decrease of choice for the consumer. George Ryde, Chairman of the Forum said: "It would lead to a Heathrow largely monopolized by the more profitable wide-bodied aircraft, primarily serving long distance destinations, squeezing out short distance and feeder airlines, some of which could collapse."[46] The sale of slots, although claimed by some as pro-competitive in that it would attract fierce competition for the slots offered for sale, is considered by many as unduly oligopolistic and favouring only a few powerful air carriers of the world.

The contrary view—to the claim that slots are allocated and therefore not owned—that slots are assets inasmuch as are airports or breweries, has been put forward by interested parties in the European Union, contrary to the European Commission's fair trading laws which prohibit the sale of slots in Europe.[47]

Another lobby against the policies concerning the allocation of slots has been directed from the charter carriers who recently hit out at London Gatwick airport for giving slot allocation on a preferential basis to scheduled carriers. The basis of the complaint is that Gatwick Airport is primarily charter carrier oriented and the allocation of slots to preferred scheduled airlines would wipe the unscheduled airline industry from the Gatwick area.[48]

The allocation of slots, if applied strategically, could be an effective marketing tool. An example of this approach could be seen in the allocation of slots at Narita Airport in Tokyo in mid 1968 when Japan's three big airlines received extra weekly landing slots at the airport in the ratio of Japan Airlines (28); All Nippon Airways (44); and Japan Air systems (14), thus giving Japanese airlines 44 percent of the total slots at Narita Airport. This measure,

taken after seven years of historical allocation of slots, incontrovertibly provokes intense competition among the three airlines of Japan.[49]

Speaking in terms of marketing strategy, a hub in Tokyo is what airlines dream of, and the award of slots to generate competition among similar carriers bodes well for the airport. Narita is further boosted in its strategic slot allocation by the fact that its second runway is to open in March 2001, adding up to 260 more take offs and landings per day. Of course, the inevitable turf war has already begun in Narita, where European carriers claim that they are being left out of the race for slots by the American carriers and Japanese carriers in Tokyo.[50] Conversely, Japanese carriers claim that Narita is already controlled by far too many foreign carriers.[51] One of the compromises suggested is the invocation of the "use it or lose it" rule, whereby an airline would automatically lose a slot that it does not use over an allocated period.

The problem of ever common delays over European skies owing to airspace congestion contributed to by ground congestion has been tackled by the use of sophisticated equipment, such as the new surface movement guidance control system (SMGCS) which uses object-oriented technology (OOT) that works on a software application from pre-assembled blocks known as objects, to speed aircraft movements on a tarmac and optimize the use of runways.[52]

With regard to airport management, the dichotomy emerges between the rights of airports to manage the capacity they create, and slot congestion and unsatisfactory demand for slots that a non-market based system created by airport autonomy may generate. Indeed, the answer may well rest with encouraging airport capacity growth, rather than manage existing limited capacity to fit its slot requirements. The latter may well stultify the growth of air transport. To this effect, the International Chamber of Commerce (ICC) most strongly urged governments through the ICC's Commission on Air Transport in 1992[53] to make adequate and timely investments in airports as part of the aviation infrastructure. The ICC observed in its statement that failure to invest would result in serious airport and airspace congestion that would in turn damage international trading.

In 1991, at the Third Meeting of the European Civil Aviation Conference (ECAC) Working Group on Intra-European Air Transport Policy (Paris, 14-16 May 1991), IATA addressed the issue of slot allocation in its working paper,[54] explaining that schedules were decided as slots allocated at Schedule Coordination Conferences, during which schedules are adjusted mainly through bilateral discussions between airlines and coordinators regarding alternative offered, or between airlines to exchange slots offered or accepted.

IATA gave, in this instance, a balanced view of the advantages and shortcomings of this system and introduced various solutions that had been considered by the aviation community to improve slot allocation in keeping with

demand. One solution IATA reported was to scrap the bilateral system that existed in favour of some kind of market mechanism. Another was to have government regulation of slot allocation. A third alternative was to maintain the present system but modify procedures and priorities by law.

At the same meeting, the ECAC Secretariat queried the existing practice, particularly the justification for giving preference to historical slots (grandfather rights) and 50 percent of the remainder of slots to new entrants, the passive governmental role played in slot allocation and the possibility of using a slot pricing mechanism (e.g. auctioning of slots between competing airlines).[55]

In May 1998, the Organization for Economic Cooperation and Development (OECD), in addressing the issue of competition policy and international airport services, observed that where there was a vertical relationship between an airport and an airline, and the airport was price regulated, the airline may have strong incentives to attempt to exclude other air carriers from access to the airport, which may need to be addressed through regulatory controls.[56] Be that as it may, regulatory concerns over slot allocation may also arise at a number of airports where there is no vertical relationship with airlines. A profit-maximizing airport has efficient incentives to allocate slots and expand capacity efficiently. In this case there would be no regulatory concern over the allocation of slots. In particular, regulatory intervention would make more transparent the number of available slots and the use of those slots, in order to make it more difficult for incumbent airlines to prevent access by new airlines (on the basis of lack of capacity) and encourage, through administrative means, an allocation of slots which might have arisen if airports have appropriate incentive to price-discriminate efficiently between flights.

OECD also felt that, where there was adequate inter-airport competition, regulatory controls on airports should be removed so that airports faced appropriate economic incentives. Where it was not possible to rely on inter-airport competition, vertical relationships between airports and airlines should be avoided. Also recommended by OECD was that regulation on airports should be improved so that airports faced efficient incentives in setting of charges and in rationing access to take off and landing rights.

One of the most significant recommendations of the OECD study was that where it was not possible to establish efficient incentives on airports, the slot allocation process should be regulated. In this context, it was suggested that slots should be allocated using market processes, in both the primary and secondary markets subject to established competition law.

CONCLUSION

The issue of slot allocation and the need for more capacity to accommodate new slots for the increasing volumes of air traffic cannot be addressed in isolation. The issue, in its totality, has to mesh with the need to infuse more airport capacity according to opportunities of market access afforded to airlines and with minimum loss of environmental and ecological equilibrium. A suitable individual case study in this regard is the preparations undertaken by Kingsford Smith Airport in Sydney for traffic envisaged during the 2000 Olympic games.

With Sydney's election as the venue for the 2000 Summer Olympic Games, the environmental impact of airport capacity and activity offered by Sydney—an aviation issue that has evoked some debate in the past—becomes once again worthy of attention. Kingsford Smith Airport has been in use since 1919 and is not the subject of Australian government policy that calls for the development of a third runway and the offer of adequate capacity until the runway is built.

All global environmental indicators reflect that the balance of nature is profoundly disturbed by the industrial practices of developed nations. The concept of sustainable development has gained acceptability in recent years to obviate any concern that one might have of industry and other development eroding nature's balance. Sustainable development has been summed up by one commentator as development that requires land to be protected, the water recycled and the air kept clean so that future generations would inherit an environment that must not be worse than the environment of our own generation.[57]

The United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro from 3–14 June 1992 (more popularly called the Earth Summit) adopted the Rio Declaration on Environment and Development that broadly recognizes that the right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.[58] The Declaration also provides that in order to attain sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.[59] States are called upon by the Declaration to cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, states are recognized as having common but differentiated responsibilities. The developed countries acknowledge in the Declaration, the responsibility that they bear in this international pursuit of sustainable development in view of the pressure their societies place on the global environment and of the technologies and financial resources they

command.[60] States are called upon to cooperate to promote a supportive and open economic system that would lead to economic growth and sustainable development in all countries in order that the problems of environmental degradation are better addressed. It is emphasized in the Declaration that trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. States are called upon to avoid unilateral actions that deal with environmental measures that address transboundary or global environment problems on an international consensus as far as possible.[61]

The Declaration recognizes that environmental issues are best handled with the participation of all concerned citizens at the relevant level. At the national level, each individual has the right to have appropriate access to information concerning the environment that is held by public authorities, including information concerning hazardous materials and activities in their communities, and the opportunity to participate in the decision-making process. Public awareness should be facilitated by states that are required to make information readily available to any citizen who requests such. States are also required to provide effective access to judicial and administrative proceedings, including redress and remedy, as relevant.[62]

There is also provision in the Declaration for states to enact effective environmental legislation. Environmental standards, management objectives and priorities are required to reflect the environmental and developmental context to which they apply. The Declaration envisages that standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries—particularly to developing countries.[63] Finally, the significance of environmental impact assessment, as a national instrument, is recognized where the Declaration requires states to undertake assessment for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.[64]

Consequently, the Rio Conference adopted Agenda 21—a wide-ranging plan—that called for the establishment of the Commission on Sustainable Development to ensure effective follow-up to the Rio Conference; enhance international cooperation; and, rationalize inter-governmental decision-making for the integration of environment and development issues. In a public statement, United Nations Secretary General Dr. Boutros Boutros-Ghali said:

> The challenge after Rio is to maintain the momentum of commitment to sustainable development, to transform it into policies and practice and to give it effective and coordinated support...The United Nations must put its development objectives on par with its political and security commitments.[65]

The fifty-three member Commission, which was established by United Nations General Assembly Resolution 47/191, began its work in May 1993. The Commission monitors *inter alia* programs towards the United Nations target of providing 0.7 percent of gross national product of industrialised countries for official development assistance and actively interacts with other United Nations inter-governmental bodies, regional commissions and development financial institutions, including the Global Environmental Facility—a fund established in 1990 by the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNEP) and the World Bank. The Commission was also mandated by the United Nations General Assembly Resolution 47/191 to promote the incorporation of the principles of the Rio Declaration in the implementation of Agenda Item 21.

The Non-Governmental Organizations (NGOs) that participated in the Rio Conference adopted the Earth Charter, which was a list of declarations and principles concerning environmental protection. The Earth Charter runs parallel to the Rio Declaration in so far as NGOs are concerned. One of the declarations of the Earth Charter is the alternative Treaty on Trade and Sustainable Development that declares that international trade should be part of sustainable development. The Treaty also requires that compensation, working conditions, land use and the exploitation of natural resources must be directed toward sustaining socially and ecologically balanced communities.[66]

The sustained interest in environmental protection shown by the world has made industries, including aviation, realize that they must take into account the adverse impact that their activities would have on the environment. Avi Gil makes a valid point when he observes that in the near future, industries and governments would be compelled to take environmental issues seriously or lose their competitive edge.[67] Gil attributes this need for caution to customers' increasing demands for cleaner products and services, and the willingness of financial institutions to support environmentally conscious industries above others who are not so environmentally conscious.[68] Sustainable growth in airport development is therefore a necessity for survival of airports. Airport managers have to be guided by the legislature and planners alike to ensure sustainable development in the implementation of airport projects.

Airport expansion is a natural corollary to increased demand for air transport, and therefore the issue of environmental protection must essentially be viewed against the increasing demand for airport space. While it is incontrovertible that airport construction and expansion may have inevitable beneficial effects on a local community or national economy, the attendant environmental problems that may arise from such projects could not be dismissed lightly. Prudent land use and waste disposal are important reasons for

caution in airport development. Airport developers often have to take into consideration the land use policies of other jurisdictions. The broad objective is to facilitate allocation of land to the uses that provide the greatest sustainable benefits and to promote the transition by a sustainable and integrated management of land resources. In so doing, environmental, social and economic issues should be taken into consideration. Protected areas, private property rights and the rights of indigenous persons and their communities, among other considerations, also have to be taken into account.

In Europe, an Airbus Industrie study on politico-economic trends as they affect the airline industry predicted that current and future events would render twenty-four European Airports frequency limited and unable to take any more aircraft movements.[69] To counter this problem, Munich is building a new airport; Stanstead has been expanded as London's third major international airport; while Frankfort, Manchester, Charles de Gaulle (Paris), Schipol (Amsterdam) and Fumicino (Rome) airports are all expanding rapidly. A study undertaken by Stanford Research Institute (SRI) reveals that air traffic in Europe alone is expected to increase by 100 percent to about 500 million passenger movements by the year 2020 and even triple to 740 million during the first decade of the next century.[70] The report claims that by the year 2020, half the airports in Europe will be straining for capacity even with potential expansions of airports.[71] Airport congestion is expected to stultify the growth of the tourism industry, the airline industry and the entire communication system in general.[72] In the airline industry alone in Europe, 390,000 people had found employment in 1989 while the entire airline, airport and other governmental enterprises in Europe employed 540,000 personnel in the same year.[73]

The SRI Report, claimed to be a conservative one,[74] has recommended eight measures for implementation by IATA, two of which are the development of an airport capacity monitoring programme and an airport support programme[75] in Europe. The report further states that the $1.5 billion expended by the European Governments to upgrade airport facilities is inadequate to support even the existing infrastructure.[76] In response, IATA has set up an Infrastructure Action Group (IAG) to take anti-congestion action in Europe.[77] The main task of this group is to work closely with the already existing IATA Task Force on Airport Congestion, where the former would implement the findings and recommendations of the latter. The situation in Europe with regard to the increasing demand for airport capacity is thus identified as critical and is underscored by the fact that in Frankfurt Airport alone, the 1985 traffic forecast for the year 2002 of 27 million passengers had been reached in 1989—more than a decade early.

Airport congestion in Europe has grown so acute that, in 1990, the International Civil Airports Association (ICAA) called for all governments con-

cerned to legislate more financial freedom in order that more facilities in airports could be installed.[78] This concern runs parallel to the SRI Report's finding that severe capacity constraints over Europe has cost airlines such as Lufthansa as many as 5200 hours in holding pattern delays over Frankfurt, Munich and Dusseldorf in 1987.[79] This is approximately a 100 percent increase from the previous year. The most recent statistics available at the time of writing shows that the percentage of people traveling by air in Europe over the total population is increasing steadily by 15 percent and that the trend would continue, owing to the steady increase in business traffic.[80] One of the most significant responses given by the aviation community of Europe towards combating airport congestion in Europe was the Meeting of the Transport Ministers of the European Civil Aviation Conference (ECAC) in Paris in April 1990. The ministers at this meeting initiated a programme with a view to improving airport infrastructures.[81]

In the United States, the problem of airport capacity is as acute and the big hubs of Chicago, Atlanta, Denver and Dallas/Fort Worth are already experiencing significant delays in departures. A survey conducted in 1990 concluded that of the thirty airports in the U.S. that have developed as hubs, at least two-thirds suffer more that 20,000 delay hours annually.[82] One of the measures that has been taken to counter airport congestion brought about by the influx of traffic is the support by the administration, the Department of Transportation and the Federal Aviation Administration for the levy of a passenger facility charge (PFC) that is now being imposed.[83] This charge is imposed by airports in the United States who, after application to the Department of Transportation, obtain permission to charge a *head tax* from $1 to $3 for each departing passenger. Revenue from the proposed fee is expected to contribute $623 million to the coffers of the Airport and Airways Trust Fund[84] and it is claimed that this money will be utilized to improve the nation's transportation system.[85]

At the 8th ICAO Air Navigation Conference in 1974, delegates adopted a recommendation,

> That states not already doing so should, to the extent practicable, take action to develop programmes for compatible land use administration and planning around aerodromes, in order to avoid incompatible development in critical noise areas, both around new aerodromes and in respect of still undeveloped areas in the vicinity of existing aerodromes.[86]

The conference also noted that planning had been enforced in many states with encouraging results and recognized that the benefits that could be derived from proper land use planning could contribute materially to the solution of the problem of noise in the vicinity of aerodromes.

One expert view is that since each airport has its own social, economic and political situation as well as a unique history and physical geography, allow-

ance must be made for these factors, while special note must be taken of the future impact of noise caused by the proliferation of aircraft that will inevitably happen in the future. The ICAO Council's Committee on Aviation Environmental Protection (CAEP) also holds the strong view that while steps taken to replace noisy aircraft by quieter ones could cause the problem of aircraft noise at airports to decline in general terms in the next decade, the proliferation of air traffic in the future would eventually bring the problem back in its full force.[87]

It is also worthy of note that the 28th ICAO Assembly, which held its sessions in Montreal form 22 to 26 October 1990, adopted Resolution A 28-3 that urged the ICAO Council to promote and states to develop an integrated approach to the problem of aircraft noise, including land-use planning procedures around international airports so that any residential, industrial or other land-use that might be adversely affected by aircraft noise is minimal.[88]

The Australian response to the deliberations of the world community and expert opinion seems to have been to amend the Federal Airports Corporation and Civil Aviation Acts in January 1991 to extend the functions of the Federal Airports Corporation (FAC) and the Civil Aviation Authority (CAA) to include carrying their measures that stemmed from the recommendation of the House of Representatives Select Committee on Aircraft Noise, the Minister for Transport and Communications also issued formal directive under the Acts in August 1991 to allocate appropriate responsibilities to the FAC and CAA.[89]

When any major improvement or change occurs at an aerodrome or airport, such as the building of the third runway at Sydney's Kingsford Smith Airport, planning strategies for the entire complex structure of aviation would have to be revised. It is not only the effect on the people residing, working or schooling in the area that matters. There are also such factors as congestion caused in the terminal building through the injection of additional traffic, security implications and long term planning for adaptation to the changing commercial and social environment brought about by the additional construction at the aerodrome that have to be taken into consideration. A well-rounded revision of airport planning therefore becomes a necessity.

ENDNOTES

1. See British Court Clears Dealing in Slots, *The Air Letter*, Monday, 29 March 1999, No. 14, 209 at p.2.

2. *Secretariat Study Group on Traffic Peaks at International Airports, Report of the Two Sessions* (Montreal, 25-29 October 1976 and 22-26 august 1977), ICAO Montreal 1977 at p.1.

3. Id. at p. 9.

4. The average levels were 19 percent and 35 percent, for utilization of passenger facilities and aircraft movement facilities respectively. Id p. 10.

5. *EURPOL-1/SG*, Information Paper No. 1, 6/3/93

6. ICAO has adopted eight Strategic Objectives (A-H), Objective E lists nine sub-objectives. One of these is to respond on a timely basis to major challenges to the safe and efficient development and operation of civil aviation on the subject of airport and airspace congestion.

7. *ANC Action Report* No. 282, 6 January 1993 at p.2

8. *Doc. 9184-AN/902*, Parts 1 and 2

9. *Id.* Part 1, 2.9.1(a).

10. Airport Planning Manual, *Doc. 9184-AN 902* Part 2, 1.3.1.

11. *Id.*1.3.23.

12. *Id.* 2.1.3.

13. *Id.* 2.2.1.

14. Airport Services Manual, *Doc 9137*, Part 3.

15. Airport Planning Manual, Part 2, *op. cit.* 2.4.1.

16. *Id.* 2.5.2

17. *Id.* 4.3.1.

18. *Id.* 4.3.1.

19. *Id.* 4.4.1.

20. *Id.* 2.6.1.

21. Annex 16 to the Convention on International Civil Aviation, Environmental Protection, and Vol. I and II.

22. See also generally, Frank A Spencer, *Transport Jet Aircraft Noise Abatement in Foreign Countries: Growth, Structure and Impact, Final Report Vol 1*: Europe July 1980, Chapter 4 at 26-41.

23. Annex 16, Vol I *op.cit.* 2.2.1 and Appendix 1, 3.2.1 and Appendix 2

24. *Id.* Chapter 4.

25. *Id.* Part III.

26. Annex 16, Vol. II *op.cit.* 2.2.

27. *Id.* Appendix 3.

28. *Id.* Appendix 5.

29. *Doc 8993*, Montreal 15-26 November 1971.

30. Resolution 16-3. See Annex 16, Vol. I 17/11/88, Forward, V.

31. Resolutions A 18-11 and A 18-12, Doc 8958, A 18-RES 18th Assembly Session, Vienna, 15 June-17 July 1971.

32. See generally, *Harvard International Law Journal* Vol. 14 No. 3 Summer 1973, at 423.

33. Eugene Sochor, *From the DC 3 to Hypersonic Flight: ICAO in a Changing Environment. op.cit.* 438.

34. *Airport Planning Manual*, DOC 9184-AN/902, Part 3.

35. Id. 1.3.1-1.3.5.

36. *Id.* Chapter 2.2.1.

37. *Id.* 2.4

38. *Id.* 3.1

39. *Id.* Appendix.

40. *Interavia Aerospace Review* 4/1990 305.

41. Alan H. Stratford, *Airports and the Environment op.cit.* 84.

42. *Airports and the Environment, Organization for Economic Co-operation and Development* (1975) at 53.

43. Frank A. Spencer, *Transport Jet Aircraft Noise Abatement in Foreign Countries, op.cit.* 93.

44. *Id.* Vol. II August 1980, at 161.

45. Assad Kotaite, ICAO Policy and Programmes in the Field of Aviation Security, *Annals of Air and Space Law*, McGIll:Montreal Vol X 1985, 83 at 87.

46. U.K. Unions Object to Slot Sale by BA, AMR, *Interavia Air Letter*, Thursday, 3 September 1998, No. 14, 068 at p. 2. See also, Slots Available, competitors wide position, American-BA Tell DOT, *Aviation Daily*. 30 September 1998 at p. 400.

47. See BA will sell slots despite objections, *Interavia Air Letter*, August 1998, No. 14, 060 at p. 2.

48. Another complaint has been received by corporate business jet operators against London Heathrow airport slot allocation policy, giving preference to scheduled and unscheduled carriers over them.

49. Top Japan airlines get 86 more Narita slots, *Interavia Air Letter*, August 1998, No. 14, 051 at p. 3.

50. Narita slots scramble, *Airline Business*, August 1998 at p. 28. See also Spoilt, *The Economist*, 4 April 1998 at p. 71.

51. Ibid. See Also DOT encounters plenty of takers for 22 U.S slots at Japan Narita, *Travel Weekly*, 23 July 1998 at p. 44.

52. Geoff Naism, Keeping the runways cleared for more take-offs, *Financial Times*, 1 April 1998 at p. 3.

53. International Chamber of Commerce, Commission on Air Transport, Slot allocation, Document No. 310/391 Rev. 2 bis, 1992-07-10.

54. *EUROPOL-I/3-WP/4*. 22/4/91

55. See *EURPOL-I/3-WP/2*, 21/3/91 at pp. 2,3 and 4.

56. OECD, Competition Policy and Internation Airport Services, *DAFFE/CLP* (98) 3, 7 May 1998.

57. George Papgiorcopula, Airports and the Environment, *Airport Technology International*, 1994 at 9-10.

58. Rio Declaration on Environment and Development, Principle 3. See *Agenda 21 and the UNCED Proceedings*. Nicholas A. Robinson, ed. Vol VI, Oceana Publications Inc: New York at 8. Also U.N. Doc A/COMF,151/26 (Vol I) 12 August 1992, Annex 1.

59. *Id.* Rio Declaration, Principle 4.

60. Rio Declaration, *op.cit.*, Principle 7.

61. Rio Declaration, *op.cit.*, Principle 12.

62. Rio Declaration, *op.cit.*, Principle 10.

63. Rio Declaration, *op.cit.*, Principle 11.

64. Rio Declaration, *op.cit.*, Principle 17.

65. See UN A/RES/47/191, 29 January 1993. See Also, *U.N. Chronicle*, March 1993, Vol XXX No 1 at 80.

66. See Adam Rogers, *The Earth Summit, A Planetary Reckoning*, Global News Press: Los Angeles, 1993, at 263.

67. Avi Gil, World's Airports Concerned About Handling of Several Crucial Environmental Problems, *ICAO Journal*, January/February 1994 at 10.

68. *Ibid.*

69. *Interavia Aerospace Review*, 4/1999 Vol 45 at 301.

70. *Interavia Aerospace Review*, 5/1990, 381. See also, Airline Executive Internation, May 1990, 16.

71. *European Planning Strategy for Air Traffic to the Year 2010*. Prepared by SRI for IATA, Geneva, Montreal, ES-5. See also ITA Press 118 May 01-05 1990 at 16.

72. *Id.* ES-7. See also *Interavia Aerospace Review* 4.1990, 301.

73. *Ibid.*

74. *Airline Executive International, op.cit.* 16.

75. *SRI Report op.cit.* at n.7 1.3 and 1-7.

76. *Interavia Aerospace Review* 5.1990 op.cit.

77. See generally, *Flight International* 30 May-5 June 1990 at 9.

78. *Airport Support*, May 1990, 5. See also generally page 7 for an account of the London airports' congestion problem.

79. See *SRI Report op.cit.* n.7 at 1-1-1.

80. Eurocontrol Operations Directorate. *Summary of Air Traffic Statistics and Forecasts*, June 1992, OPS/181/5 at 4.

81. See *IATA Press* 119 May 16-31 1990, at 3.

82. *Airline Executive International*, May 1990, 18.

83. *Ibid.*

84. *Aviation Week and Space Technology*, February 12, 1990, at 133.

85. *Ibid.*

86. *Doc 9101*, AN-CONF/8, Montreal 17 april-11 May 1974, Recommendation 11/2.

87. John Crayston, ICAO Group Identifies Environmental Problems Associated with Civil Aviation, *ICAO Journal*, August 1992 at 4.

88. *Doc 9563*, Assembly 28th Session (Extraordinary), Plenary Meetings, Resolutions and Minutes, 22-26 October 1990.

89. See Department of Transport and Communications Annual Report 1991-92, Australian Government Publishing Service: Canberra, 1992 at 22.