

# Joint Workshop Report on Maximizing Civil Aviation's Economic Contribution



**ATAGX**



## Challenges and Potentials



Air Transport Action Group

International Civil  
Aviation Organization

The World Bank

6-8 June 2005  
ICAO Headquarters  
Montreal, Canada

## Acronyms

ACI	Airports Council International
ATAG	Air Transport Action Group
ATM	Air Traffic Management
ATS	Air Traffic System
AU	African Union
BA	British Airways
BAA	British Airports Authority
CAA	Civil Aviation Authority
CANSO	Civil Air Navigation Services Organization
CAPS	Civil Aviation Purchasing Service (ICAO)
CNS	Communication, Navigation, Surveillance
COCESNA	Central American Air Navigation Services Corporation
COSCAP	Cooperative Development of Operational Safety and Continuing Airworthiness Program (ICAO)
CUSS	Common Use Self Service
DOT	Department of Transportation (US)
EASA	European Aviation Safety Agency
EC	European Commission
EU	European Union
EVA	Economic Value Added
FAA	Federal Aviation Administration (US)
FSC	Full Service Carrier
GNSS	Global Navigation Satellite System
GDP	Gross Domestic Product
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IDB	Inter-American Development Bank
IFC	International Finance Corporation (World Bank)
IFFAS	International Financial Facility for Aviation Safety (ICAO)
IPFS	IATA Partnership for Safety
IOSA	IATA Operational Safety Audit
IT	Information Technology
RPK	Revenue Passenger Kilometres
LCC	Low Cost Carrier
MDGs	Millennium Development Goals
MIGA	Multilateral Investment Guarantee Agency
NAS	National Airports System
NEPAD	New Partnership for Africa's Development
ODA	Overall Development Aid (World Bank)
PPP	Public Private Partnership
RFID	Radio Frequency Identification (for baggage tracking)
SMS	Safety Management System
SSA	Sub-Saharan Africa
TCB	Technical Cooperation Bureau (ICAO)
USOAP	Universal Safety Oversight Audit Program (ICAO)
WTO-OMC	World Trade Organization
WTO-OMT	World Tourism Organization

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# Maximizing Civil Aviation's Economic Contribution

## Introduction

The World Bank (WB), the International Civil Aviation Organization (ICAO), and the Air Transport Action Group (ATAG) conducted a joint workshop on **Maximizing Civil Aviation's Economic Contribution - Challenges and Potentials** from 6 to 8 June 2005 at the ICAO Headquarters in Montreal, Canada.

The organizers of the workshop were Mohamed Elamiri, Director, Air Transport Bureau, ICAO; Charles E. Schlumberger, Principal Air Transport Specialist, WB; and Dr. Philippe Rochat, Executive Director, ATAG. The workshop was moderated by Dr. Michael Carney, Professor of Management, John Molson School of Business, Concordia University, and the session moderators as indicated in the program.

The workshop attracted around 120 participants from all regions, with a large African presence and a fair balance between governments, development cooperation institutions, international organizations, and aviation industries. The international audience benefited from informative expert presentations and stimulating discussions, which gave workshop participants the opportunity to consider and debate a wide range of topics and views on the evolving challenges and development constraints in air transport.

This report contains the essence of the presentations and subsequent discussions as well as conclusions emanating from the four thematic working groups. It has been issued without formal editing. The workshop program, presentations, speeches, speaker biographies, information papers, and the list of participants are accessible online at [www.ICAO.int/ATWorkshop](http://www.ICAO.int/ATWorkshop). The report was collaboratively authored by Heinrich C. Bofinger (The World Bank), Cornelia Fischer (ICAO), and Anna Patient (ATAG).

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### Executive Summary

Within the all-encompassing title of the Joint Workshop, the main thrust of which was the importance of maximizing the economic contribution of civil aviation, deliberations focused on the many aspects of aviation and its contribution toward the main theme. The partners, ICAO, the World Bank, and ATAG, through their keynote speakers, enriched and encouraged discussions on various issues.

Dr. Assad Kotaite, President of the Council of ICAO, stated that an air transport system which is neither safe nor secure simply cannot prosper. Dr. Kotaite challenged the workshop to consider ways and means of liberalizing air transport, while at the same time ensuring a robust recovery of the industry based on healthy financial returns. He added that this could only be achieved through global cooperation. Dr. Maryvonne Plessis-Fraissard, Acting Vice-President, Infrastructure, presented the World Bank's perspective, observing that there was a direct link between air transport and economic growth. Dr. Plessis-Fraissard advised that the World Bank had a renewed interest in air transport as it was now apparent that an efficient air transport infrastructure would assist tourism and encourage foreign investments, trade and exports.

Brian Pierce, Chief Economist, IATA, drew the workshop's attention to the fact that liberalization stimulated innovation in air transport and lowered prices. However, he cautioned that airlines were in an unstable position, losing economic value, and urged that the situation be remedied through recognition of the wider economic benefits of the industry.

The workshop went on to recognize that civil aviation acted as an economic catalyst and that air transport was a major employer, supporting a total of 29 million jobs globally, including 15.5 million jobs from catalytic impacts of tourism. It was also noted that airports attracted land development for industrial uses, which paved the way for investments in new businesses including tourism and recreation, and improvements in aircraft technology had had an impressive impact in reducing accident rates and noise energy output. Furthermore, it was emphasized that civil aircraft manufacturing played an important role. In the US alone, the industry had supported a total of 11 million jobs and created US\$ 900 billion of economic activity. The Workshop also noted the increasing interdependence between aviation and tourism, and the immense possibilities for joint work between ICAO, the World Bank, ATAG and WTO-OMT in increasing the contribution to the global economy by a joint air transport and tourism industry.

The workshop program also included consideration in some depth of liberalization, air navigation services, and air traffic management, together with their implications on maximizing the economic contribution of civil aviation. The significance of legacy carriers and low cost carriers formed an important part of the discussions on competition and liberalization, as well as the overall sustenance of the airline industry. There were also deliberations on funding for a safe and efficient air transport industry through financial institutions as well as programs such as the New Partnership for Africa's Development (NEPAD) and ICAO's Technical Cooperation Program.

Finally, the workshop broke into four working groups inquiring into challenges faced by air carriers, infrastructure providers, and issues involved with ensuring development cooperation, resource mobilization, safety, and security. The conclusions of these working groups are contained in this report.

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### Keynote Speeches

#### *Dr. Assad Kotaite, President of the ICAO Council*

Representing the host organization, Dr. Assad Kotaite, President of the ICAO Council, greeted the audience and welcomed this joint workshop as a timely initiative aimed at promoting the financial health of the air transport industry along with key issues and challenges that would shape the future growth of civil aviation.

In over 50 years with ICAO, Dr. Kotaite had witnessed the extraordinary economic contribution of civil aviation at the national, regional, and global levels. When ICAO was created in 1944, barely nine million passengers traveled with the world's few airlines in existence then. In 2004, close to 1.9 billion passengers boarded scheduled services alone, while 37.7 million tonnes of freight were transported by air. This activity was facilitated by extensive airport and air navigation facilities, and dynamic technology advancements in airframe, engines, and avionics manufacturing. Air transport, defined as commercial carriage by air, generated millions of jobs and supported many more in affiliated industries, including the world's largest – travel and tourism.

Dr. Kotaite shared with the audience the awareness that the air transport industry was still recovering from the cumulative effect of such factors as the impact of 11 September 2001 and the preceding economic slowdown that year, the Severe Acute Respiratory Syndrome epidemic of 2003, and now historically high fuel prices. He commented that the current situation was not ideal as the recovery of the aviation industry was fueled by loans while a robust recovery based on healthy financial returns was needed.

He pointed out that ICAO, as forum for international civil aviation, played a key role in fostering cooperation among all members of the global aviation community first and foremost by ensuring safety and security of the air transport system. A system that was neither safe nor secure simply could not prosper. The fact that 2003 and 2004 were the safest years since 1945 was in part due to the regulatory framework, established by ICAO and supported by its Contracting States as well as the aviation community.

Dr. Kotaite stressed that in many parts of the world serious weaknesses existed which had been identified and were continually monitored, since 1999, through the ICAO Universal Safety Oversight Audit Program (USOAP), a mandatory audit program that assesses the level of implementation of ICAO Standards and Recommended Practices (SARPs) through the national safety oversight systems of Contracting States.

Identifying weaknesses was one step, correcting them was yet another, he stated. Many States faced considerable difficulties in the implementation of SARPs and in performing safety oversight, primarily due to the lack of adequate human, technical and financial resources. This fundamental problem was addressed by the 35<sup>th</sup> Session of the ICAO Assembly in the fall of 2004 when it adopted Resolution 35-7 on a Unified Strategy to resolve safety-related deficiencies.

The implementation plan for the Unified Strategy was based on two elements, namely first to provide assistance to States or groups of States in resolving safety-related deficiencies and improving safety oversight, and second, to ensure increased transparency and sharing of information for use by States when performing their safety oversight functions. The strategy was a shift in focus for ICAO's regular

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program, from the development of standards to the implementation of safety-related provisions and remedial action.

He elaborated that a key element of the implementation plan for the Unified Strategy was fostering partnerships among States, industries, regional safety oversight organizations, financial institutions, and other international organizations that have a vested interest in the integrity of the global air transport system. States and other stakeholders widely supported regional initiatives for fostering cooperation in civil aviation safety oversight as seen at the Global Summit on Regional Aviation Safety Oversight held in Washington, in February 2005.

Furthermore, the Unified Strategy encouraged Contracting States to take advantage of various sources of funding available, one of which was the International Financial Facility for Aviation Safety (IFFAS). IFFAS was created specifically to finance safety-related projects that correct deficiencies identified through USOAP and for which States cannot otherwise provide or obtain financial resources. Another was the very successful Technical Cooperation Program of ICAO, which in 2004 undertook 253 technical cooperation projects in 113 countries, with total expenditures of \$120.3 million. Either from these or other sources, such as the World Bank, other development banks, the private sector, and international financial institutions, the funds had to have the desired impact of resolving deficiencies and furthering the harmonized implementation of ICAO SARPs. Implementation of the Unified Strategy was a top priority for ICAO, he emphasised, and the active collaboration of all stakeholders was essential. Again, prosperity was attainable only through a system that was safe and secure in which all stakeholders would have a role to play.

Dr. Kotaite continued that ICAO supported the economic well-being of aviation in other ways, as with the quest for liberalization. In 1994, the world was asking “whether or not” to liberalize air transport. In 2003, the question became “how to” liberalize. Against this backdrop, ICAO held the fifth Worldwide Air Transport Conference, which established a framework for the economic liberalization of air transport. Participants approved a Declaration of Global Principles to “create an environment in which international air transport may develop and flourish in a stable, efficient and economical manner without compromising safety and security and while respecting social and labour standards”.

He informed the audience that the Declaration specified the individual and collective roles as well as responsibilities of States in working towards the ultimate goal of giving international air transport as much regulatory leverage autonomy as possible, in keeping with the needs of the travelling public and the industries, while respecting its specific characteristics and striving to limit its environmental impact. The Conference reached consensus on fundamental liberalization issues, including air carrier ownership and control, market access, fair competition and safeguards, consumer interests, product distribution, dispute resolution, and transparency.

Operational flexibility was another contributor to improved financial performance for airlines. Over the years, ICAO has been the catalyst for a number of specific initiatives in many parts of the world, such as polar routes, reduced vertical separation minimums, streamlining of major routes for shorter flight times, and keeping vital airspace open in times of conflict. All of this, as well as the design of a seamless, global air traffic management system, was achieved through on-going cooperation between States, industries, and international organizations.

The President stated that ICAO's mandate was to ensure the safe, secure, and orderly development of international civil aviation, and that ICAO was dedicated to working with air transport industries in promoting a healthy and dynamic operating environment for airlines and operators worldwide.

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More specifically, the preamble to the *Convention on International Civil Aviation*, the charter of ICAO, called for international air transport services established on the basis of equality of opportunity and operated soundly and economically. For more than 60 years now, ICAO had pursued this objective, partly in the four areas highlighted by the proposed agenda for this workshop:

- promote the role of air transport as a catalyst for economic growth and development;
- review the impact of changes in air transport policies, management, and technologies;
- identify and discuss constraints and solutions to the sustainable development of air transport; and
- promote close cooperation among all interested parties.

Dr. Kotaite concluded that one can best reap the full economic, social, and cultural benefits of air transport through the long-term financial health of aviation industries globally. With the calibre and scope of participants at this workshop, he expressed confidence that peoples and nations around the world will benefit from ways and means proposed for maximizing civil aviation's economic contribution.

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### ***Dr. Maryvonne Plessis-Fraissard, Acting Vice-President, Infrastructure, The World Bank***

Dr. Maryvonne Plessis-Fraissard said that the workshop on air transport could not have taken place at a better time as it came at a moment of renewed focus from the international community on growth and infrastructure, and in particular, in transport and energy.

Infrastructure has traditionally been a major focus of the World Bank's development goal, accounting for some 40% of its Overall Development Aid (ODA), before falling to 10%-15% in the early 1990s. Yet, these last three years have seen encouraging signs as regards the role of infrastructure in economic development and in reducing poverty, and there is hope that infrastructure funding will return to its level of 40%, and well beyond. Mr. Wolfowitz, in his first day address to the World Bank staff, has said that "infrastructure is key to economic growth, and is about much more than pouring concrete..." – it is about "...intelligent infrastructure funding."

The World Bank, in its early days, had financed air transport activities and civil aviation. KLM and Air India are examples of such involvement. But there prevailed the belief that (i) the private sector was better equipped, and therefore could and should take over infrastructure activities and projects, (ii) air transport was for "the rich", and (iii) adequate instruments as well as a proper mandate were lacking to implement regional projects involving several countries. All these factors contributed to the shift of World Bank funding from infrastructure towards other social services activities, such as health and education.

While the World Bank did reduce its overall funding on infrastructure and transport, it, however, never really totally abandoned it. There was the constant pressure from client countries asking for much needed infrastructure, and the realization that underinvestment in infrastructure—all infrastructures—does have an unequal impact on the poor. The plain truth is that the poor suffer disproportionately from the lack of infrastructure. For an institution in the business of fighting poverty, such realities cannot be overlooked.

There is a direct—albeit hard to quantify—link between air transport and economic growth. Yet there are ways to measure the contribution of transport to economic growth. Such measurements would be:

1. The contribution of the transport sector/sub-sector to the GDP (about 9%).
2. The share of the average production costs from the transport sector: In Sub-Saharan Africa (SSA), the indirect costs of production are two to three times higher than the costs incurred by successful exporting countries, with more than 30% of these costs being transport related.
3. The link between infrastructure investment and economic growth. It is said that in order for Africa to reach the Millennium Development Goals (MDGs)—which themselves require a 7% growth of the economy—5% of the GDP must be dedicated to infrastructure. Likewise, if it had the same level of infrastructure investment as Korea, Africa's growth would be 1% more per year.
4. The creation of jobs and the generation of fiscal revenues.
5. The correlation with private investment decisions to locate or relocate.
6. The correlation of air transport activities with GDP/capita.
7. And the sharpest linkage: The exclusion from an international air transport network, either because of inadequate air transport infrastructure, services, or air safety regulation results in crippling tourism, foreign investments, trade, and exports. A country without air transport is

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de facto cut out from the business of the world, since 40% of the goods in value are exchanged by air. It cannot therefore be a participant in the global economy. If, indeed, poverty reduction is the order of the day, such overwhelming realities invalidate the notion that air transport is for “the rich”.

A quick reflection on the above leads to the obvious conclusion that infrastructure deficits have major implications for economic development: they slow economic growth, they reduce competitiveness, and they delay poverty reduction.

And so, a good hard look is in order to understand how infrastructure came to be set aside of the international agenda:

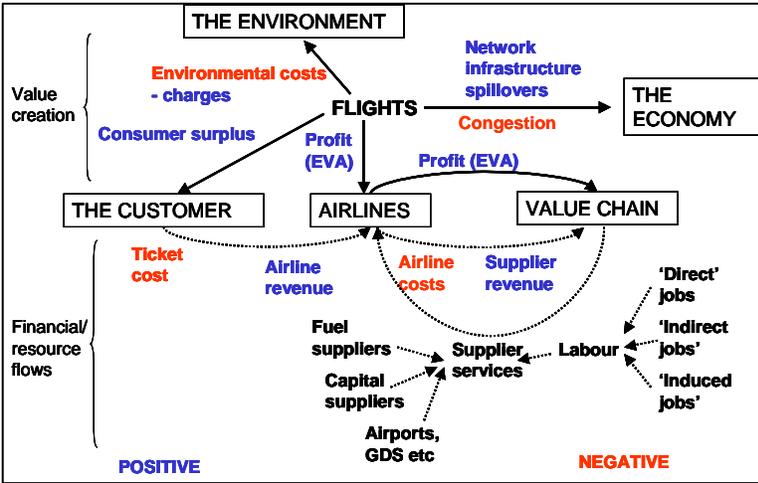
1. Too much internal focus—infrastructure for infrastructure sake. It is important to avoid internal focus. The World Bank is in the business of providing an intermediary good—transport infrastructure and services—towards creating jobs and wealth in a safe and sustainable environment, and, as an institution, has to report to the international community on achievements towards these ultimate objectives.
2. Lack of monitoring/evaluation of investments in light of development objectives. The MDGs have given the international community the opportunity and the means, and they have entrusted it with objective mandates to set targets for countries. But there is little mention of transport in the MDGs. So, governments have shifted their commitments towards social services such as education and access to water, and, subsequently discussions are focused on such initiatives, dismissing the fact, for instance, that access to water requires infrastructure to bring water, access to hospitals requires access to good roads. Too often such “intermediary” instruments are absent, yet they play a vital facilitating role. Such oversight can be dramatic when considering, for example, that 60% of women who die in labour die on their way to the hospital.
3. Lack of benchmarking for priority setting. Because transport has long been “taken for granted”, it has been overlooked in the debates and the MDGs. It is very important that it be included again as a development target in the discussions of the MDGs. Such inclusion will ensure that transport is properly monitored and managed, and will provide the tools to benchmark the Bank's work and provide convincing arguments as to why governments need to give due priority to transport. Just as benchmarking in the social sector communicates to governments a sense of where they stand vis-à-vis their health, education, and social services targets, so would transport benchmarking communicate to governments the contribution of transport in economic development and poverty reduction. There is in fact mention of transport in the MDG number eight (“Develop a global partnership for development”), and more specifically in Target 14: “Address the special needs of landlocked developing countries and small island developing states” through the provision of the program proposed by the 22nd UN General Assembly Session.

Finally, to conclude, it is fitting to highlight air transport as a fine example and reference of sustainable partnership, because of its proven record on quality, safety, and its environmentally-sensitive approach to economic development. It is also an example of a successful self-regulated initiative by, with, and for air transport practitioners, as well as an example of what can be achieved when practitioners pull their resources together to define and create instruments to implement highly ethical and developmental goals.

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**Brian Pearce, Chief Economist, International Air Transport Association**

Brian Pearce, Chief Economist, IATA, reported on new evidence on the wider economic benefits of air transport. The concept of economic benefit as value created in excess of cost was presented and defined by categories: customers, airlines, suppliers, the workforce, the environment, and the economy. In order to maximize these economic benefits, the challenge was to maximize consumer surplus, industry profit in excess of capital costs, and the wider economic benefits from air transport networks and infrastructure, which were key assets for business. Simultaneously, environmental impacts and congestion needed to be minimized.



*Figure 1: With economic benefits for the developing world, the focus of the discussion is mostly on the added benefits for economic development in the spillover effects on the economy, i.e. the boosting of productivity and the increase in capital investment (top part of chart). For the developed world the discussion is in the same region as reflected by constraints in infrastructure expansion.*

Economic contribution was value created in excess of cost. Customers received value in excess of ticket costs – this was a significant economic gain for the consumer. Ideally, airlines would receive value in excess of operating costs (“Economic Value Added”, or short “EVA”), including capital costs. The fact that they did not showed serious problems with the sustainability of the value chain. Similarly, suppliers received EVA, and the workforce received wages in excess of the next best opportunity (airlines added opportunities to the workforce). In figure 1, the value creation it depicted in the top half. The consumer gained the greatest benefit from air transport, the environment was adversely

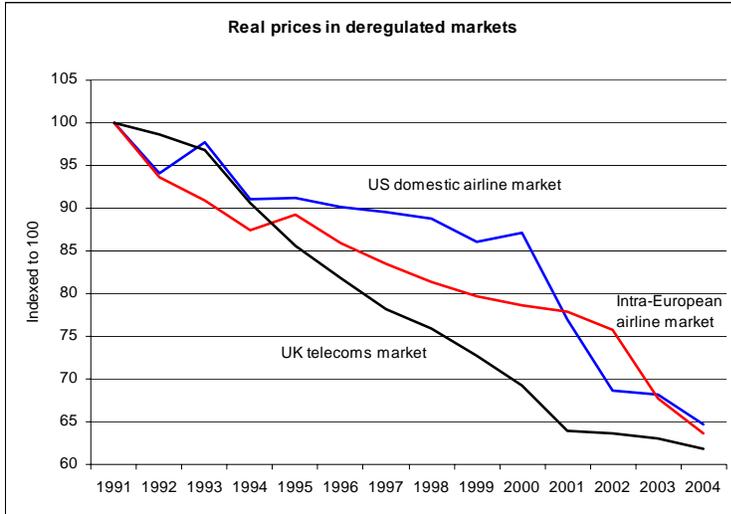
affected, and most importantly, both for developing countries and for infrastructure development in developed economies, there was the overall spillover impact of air transport in boosting productivity and business investment, minus the cost of congestion.

So in order to maximize aviation's economic contribution, the consumer surplus (the customer value in excess of ticket/waybill costs), the economic value added (the industry profit in excess of capital costs), and the network infrastructure costs (wider economic benefits) had to be maximized, while at the same time minimizing the environmental impacts and congestion.

Much of the economic benefit went to consumers, especially as the price of flying had decreased by some 30% over the last 10 years (see figure 2). According to Oxford Economic Forecasting's report on The Contribution of the UK Aviation Industry, air business passengers received an economic benefit of 125% in excess of the ticket cost, freight customers 63%, leisure passengers 46%, and overall all travelers an average of 77%.

However, airlines themselves were losing money and economic value – their return on invested capital minus their weighted average cost of capital during the upturn between 1996

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**Figure 2:** The price of flying has fallen 30% in the last ten years.

coming from increased business investment, and an even larger 2.3% from gains to productivity. Though not as dramatic, a 10% increase in air transport usage boosted GDP by 1.6% in the long-run, with 0.7% coming from additional business investments, and 0.9% from improved productivity, according to the Oxford Economic Forecast/IATA study (see figures 3 - 6).

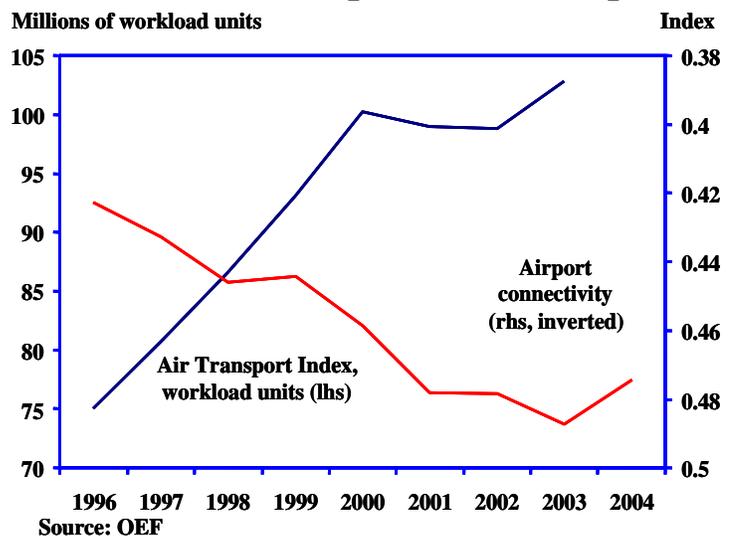
Business surveys were in support of the top-down benefit estimates. Among 625 businesses surveyed in the U.S., France, China, Chile, and the Czech Republic, 70% said the key benefit of air transport connectivity was to serve bigger markets, 25% could reduce costs through economies of scale, 25% said that innovation and investment in R&D would be very badly or badly affected by constraints on air transport, 15% (28% in China) said past investments had been affected by the availability of good air transport links, and 50% said their ability to compete internationally would be badly or moderately affected by constraints on air support (see figures 6 -10 for additional details).

In conclusion, the customers of air transport enjoyed the most economic benefit. Liberalization stimulated innovation in air transport and lowered prices, and business travel and freight shipping valued air transport most highly. At the same time, airlines were in an unstable position, losing economic value. Rational restructuring in the industry was being constrained by regulatory forces, and uneven competition in the value chain of air transport

and 2000 was -1.2%, and during the downturn between 2001 and 2004 at -5.4%. Due to hampering by regulatory regimes, airlines had not been able to follow a pattern of rational restructuring, particularly across borders with national investment rules. Regulators also had to address the lack of competition along the value chain causing uneven returns.

The key for wider economic development was not just the quantity of air traffic, but the quality and connectivity of the network. A 10% rise in air transport connectivity, as measured by the distance an average seat could travel, boosted GDP by 3.7% in the long run, with a 1.4% gain

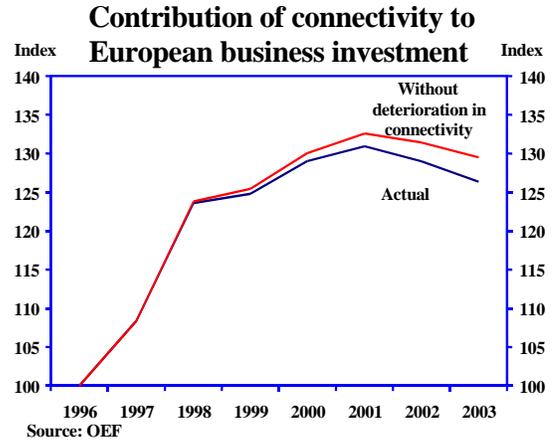
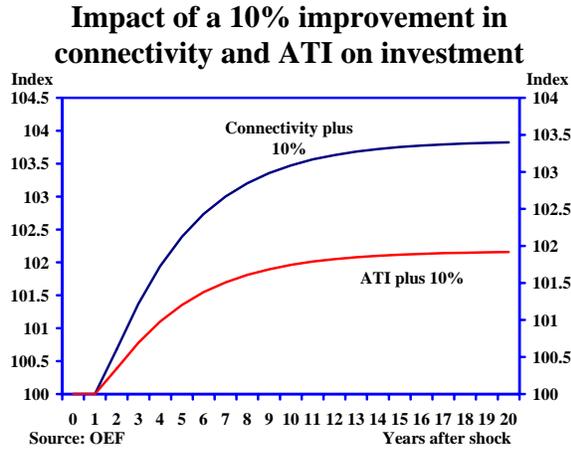
## Measures of European Air Transport



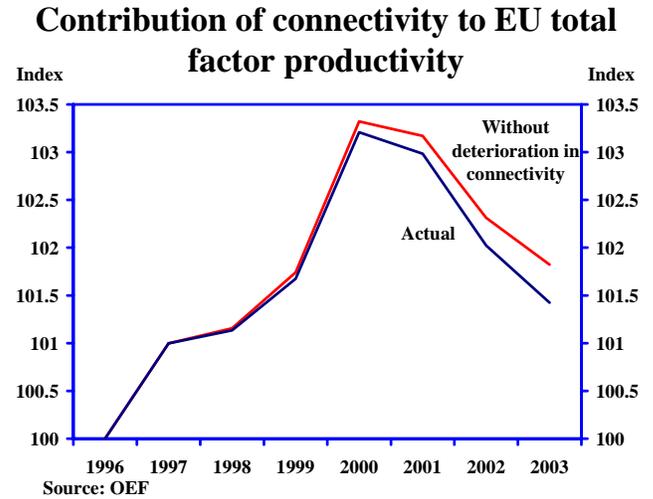
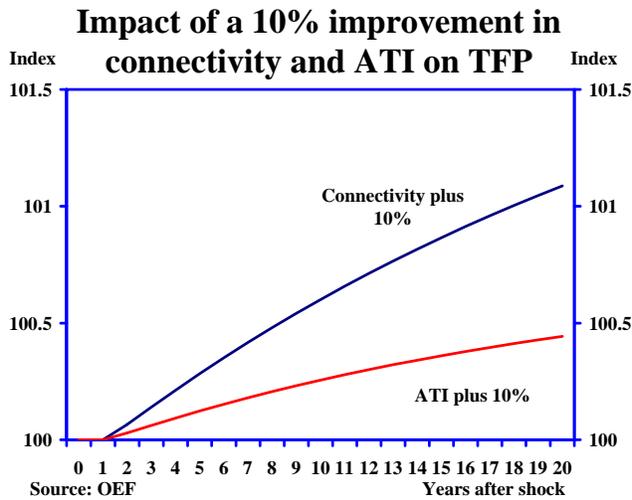
**Figure 3:** In Europe, volumes are up 25% but quality has fallen 10%.

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was generating uneven returns. The importance of the wider economic benefit of the needs of the sector had been neglected and would need to be addressed now, since the air transport network were a key infrastructure asset for business, and enhanced business investment and productivity. The quality and connectivity of the network mattered as much if not more than the sheer quantity of capacity – a 10% rise in connectivity would boost GDP by 3.7%, and a 10% rise in volume would boost GDP by 1.6%. Developing countries would benefit from more open access. In more developed economies, infrastructure constraints would create a significant economic cost and would hamper further expansion.



*Figure 4: Connectivity has a major impact on business investment.*



*Figure 5: Connectivity also boosts industry productivity.*

### Connectivity in Europe

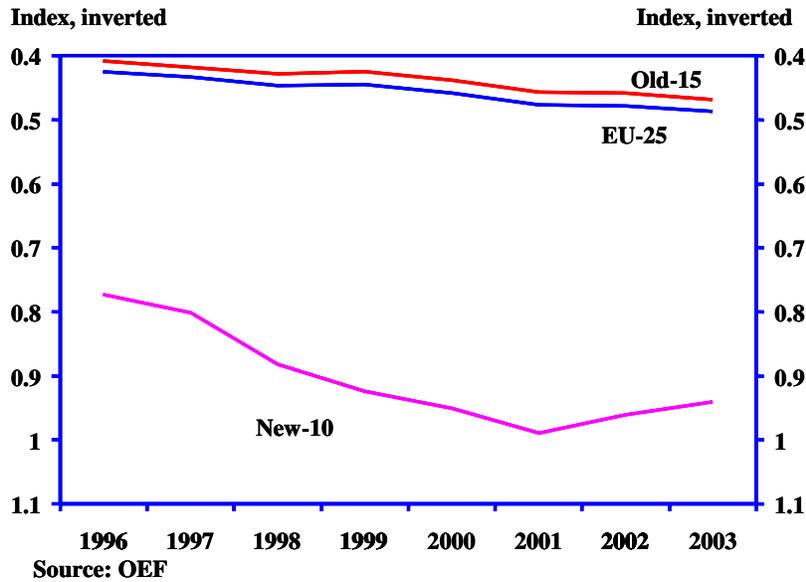
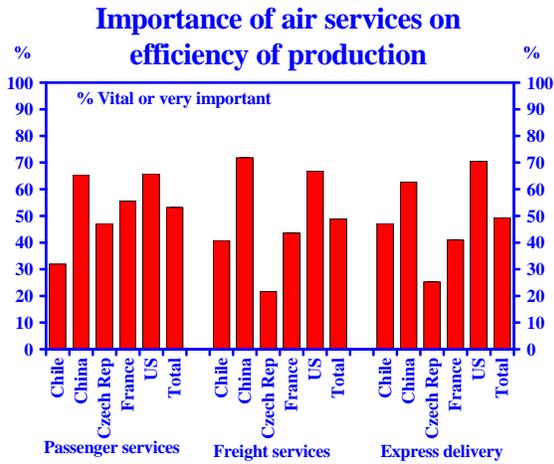


Figure 6: Better connectivity would help development in the new EU-10.

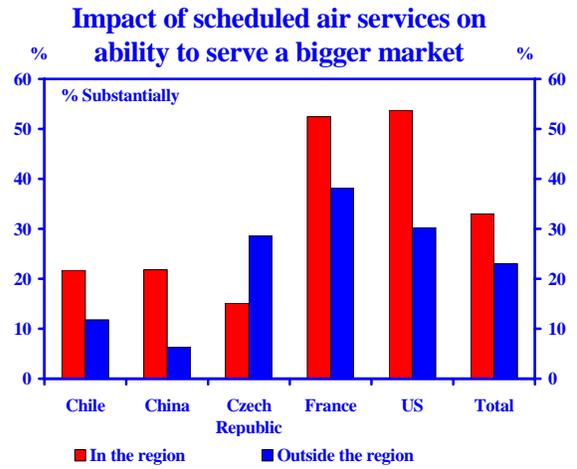
Value of a flight in US \$*	US	France	China	Czech Republic	Chile
Point-to-point regional flight	\$12,500	\$33,800	\$49,000	\$36,800	\$21,200
Flight to or from hub airport	\$13,700	\$37,200	\$61,300	\$49,700	\$26,500
Average flight	\$13,200	\$35,700	\$56,000	\$44,200	\$24,200
All-business or express delivery flight	\$37,700	\$102,000	\$112,000	\$126,300	\$69,100

Table 1: Wider economic benefits are of significant value. The table above shows the added economic benefit of an additional flight or airport slot per country listed.

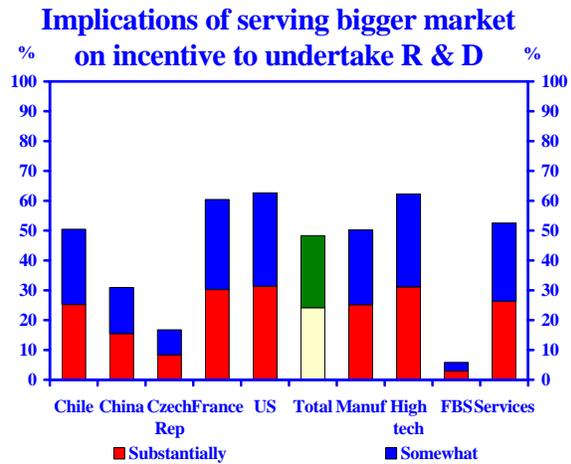
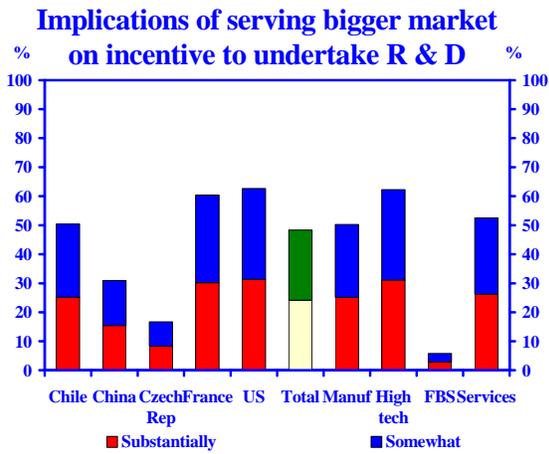
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**Figure 7:** According to questionnaire respondents, the air transport network allows efficient location of production.

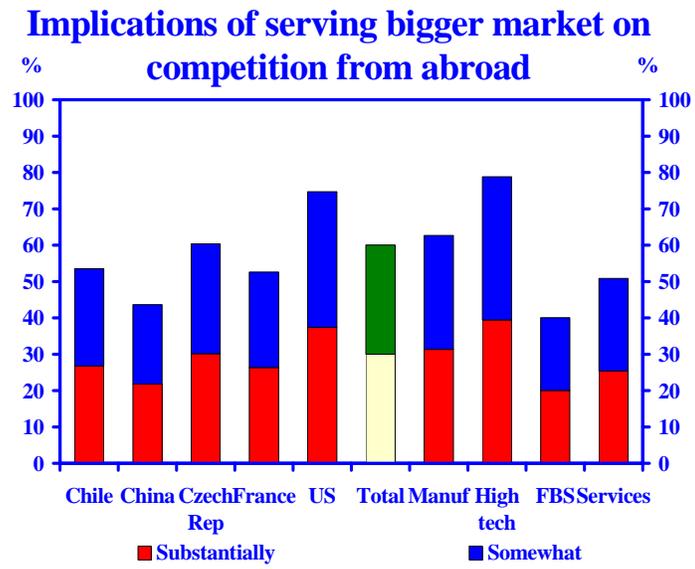


**Figure 8:** The network connects business to regional and global markets.



**Figure 9:** Well connected air transport is vital to innovation and R&D.

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*Figure 10: Exposure to competition will increase efficiency.*

## Session 1: Air Transport as a Catalyst in Economic Development

The economic contribution of air transport was addressed at the global level initially by ATAG, followed by ICAO. ICAO had also developed methodological guidelines for evaluating the contribution of civil aviation industries to a given local/regional or national economy. The presentation on the economic importance of airports stressed their direct and indirect benefits and development in Africa. From the perspective of the aerospace industry, the potential for growth in air travel and civil aircraft manufacturing were reviewed, and benefits to economies as well as the potential of developing countries were emphasized. The representative of the World Tourism Organization discussed the interdependence between aviation and tourism in the context of how to empower the participation of the world's poorest countries.

### *The social and economic benefits of air transport*

**Dr. Philippe Rochat, Executive Director, ATAG**, presented in his opening remarks the global and regional findings on the social and economic benefits of air transport from ATAG's new study. Air transport, he explained, was a major employer and supported a total of 29 million jobs globally, including 15.5 million jobs from catalytic impacts of tourism.

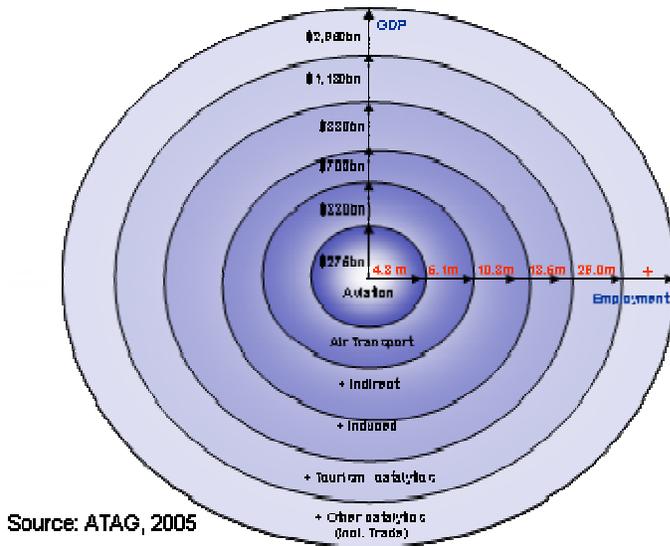


Figure 11: Global economic impact- Employment and GDP, 2004.

viewed at [www.icao.int/ATWorkshop/Docs.htm](http://www.icao.int/ATWorkshop/Docs.htm) or on ATAG's website [www.atag.org](http://www.atag.org)

Aviation's global economic impact (direct, indirect, induced, and catalytic) was estimated at US\$ 2,960 billion – equivalent to 8% of the global gross domestic product (GDP) in 2004.

As a capital intensive business, productivity per worker in the air transport industry was very high, ranking around 3.5 times above the average of other industries.

Further references to the global findings were made in ICAO's presentation. ATAG's recent publication, entitled *Social and Economic Benefits of Air Transport, 2005 edition*, could be

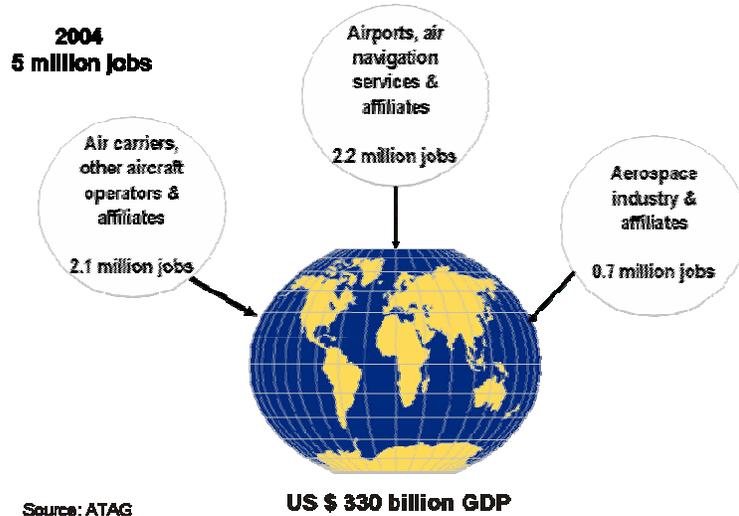
### **Civil aviation's economic contribution**

**Ms. Cornelia Fischer, Economist, Air Transport Bureau, ICAO** presented ICAO's evaluation of civil aviation's economic contribution, which was mandated with two objectives: to estimate civil aviation's direct contribution to the global economy and its multiplier effects, and to develop guidance material on assessment methodologies. The results are published in ICAO Circular 292, entitled *Economic Contribution of Civil Aviation, Volume 1: Global Perspective*, and *Volume II: Assessment Methodologies*.

## Maximizing Civil Aviation's Economic Contribution

Civil aviation acted as an economic catalyst. Air transport services, passenger traffic, and cargo traffic gave some indications on demographics and the strength of an economy in terms of business activities, particularly with regards to international trade of goods and services, including tourism.

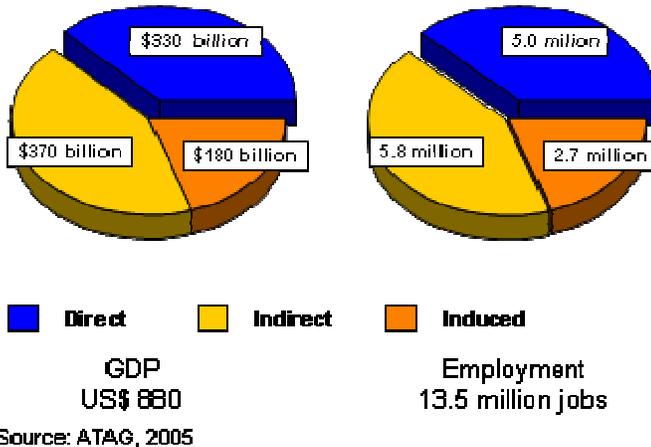
Economic impact research assessed employment empirically where the jobs were located. Worldwide in 2004, in the order of 3.7 million civil aviation industry jobs were located on or adjacent to airports. Airport operators had a work force of 330,000 people, while airport support activities employed 1.9 million people. Of the global airline personnel of 2.1 million, an estimated 1.5 million were airport-based.



*Figure 12: Direct Employment and GDP of Civil Aviation – World, 2004.*

According to the 2004 global estimate commissioned by ATAG, 13.5 million jobs worldwide could be attributed to civil aviation, of which some 5 million were directly employed by air transport and aerospace industries, as shown in figure 12. Another 5.8 million jobs were generated indirectly by suppliers, and 2.7 million jobs created through induced employment effects.

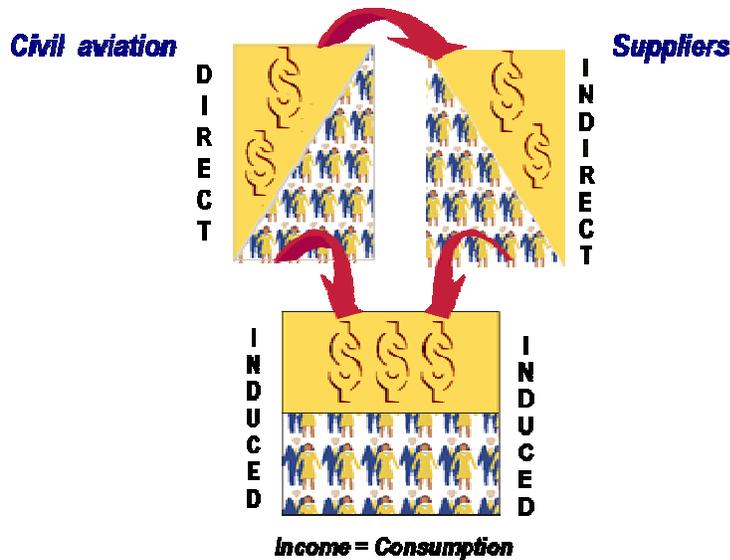
The total contribution of civil aviation in terms of GDP was estimated at US\$ 880 billion – equivalent to 2.4% of the global GDP in 2004. This figure was composed of US\$ 330 billion direct, US\$ 370 billion indirect, and US\$ 180 billion induced demand (figure 13).



*Figure 13: Direct Employment and GDP of Civil Aviation – World, 2004.*

airport on a regional/national economy and of civil aviation on a national economy. Two methodological approaches for an impact assessment were introduced, namely a core approach and an expanded approach. For both approaches, case studies of impact

## Maximizing Civil Aviation's Economic Contribution



*Figure 14: Direct Employment and GDP of Civil Aviation – World, 2004.*

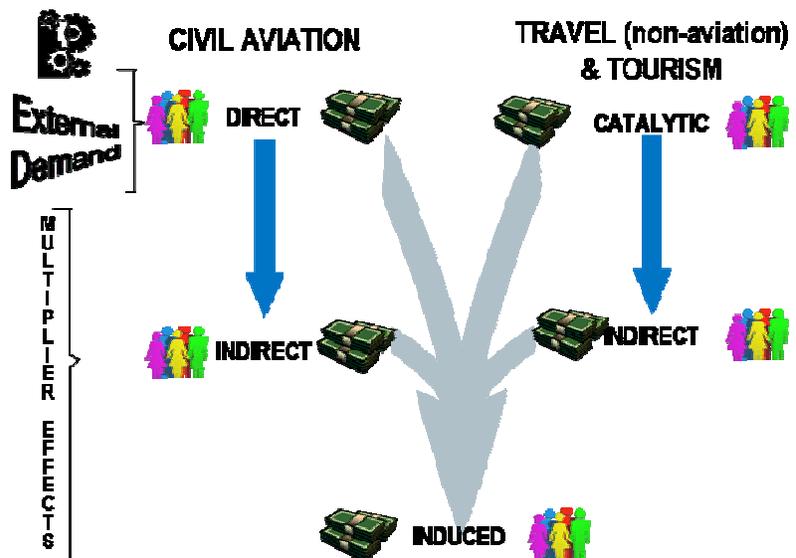
assessments of airports and a national economy demonstrated the process and results.

Measuring the direct demand effects accounted for the output, from which the value added was derived, and the employment that air carriers, airports, aerospace and their respective affiliates as well as other providing industries generated throughout a given economy on an annual basis. In order to calculate the multiplier effects of civil aviation industries and to arrive at the total demand in a core impact assessment, indirect and induced demand in terms of output and employment were assessed. Intermediate inputs of suppliers along the value-added

chain and the related employment were fed into the analysis as indirect demand effects.

Consumer spending from income earned through direct and indirect economic activities, and public expenditures from related tax revenues, constituted the induced demand effects. Expanded multiplier effects included the catalytic demand effects of air transport users, such as travel-related expenditures of airline passengers other than ticket and airport-based purchases, or revenues of freight forwarders.

The guidance material was intended to assist planners and decision-makers to identify the economic contribution of civil aviation, which could serve as an instrument to justify funding requirements for the continuous development of infrastructure and other needs of civil aviation.



*Figure 15: Expanded Multiplier Effects.*

## **Maximizing Civil Aviation's Economic Contribution**

### ***The economic importance of airports***

**Ms. Naomi Cidi, Deputy Managing Director, Kenya Airports Authority**, presented the economic importance of airports, stressing their direct and indirect benefits, emphasizing developments in Africa. In 2003, African airports recorded 90 million passenger movements (2.6% of the world total), and 1.2 million metric tonnes of cargo (2.9% of the world total), according to the Airports Council International (ACI).

New, upgraded, or expanded airports emerged in Africa, with rapidly growing passenger and cargo traffic since the mid-1980s and 90s, spurred by international trade, and the gradual liberalization and deregulation of national and regional airline industries.

Airport business development focused on identifying niche areas and expanding commercial and retail bases. Airports attracted land development for industrial uses which paved the way for investments in new businesses, including tourism and recreation. Many governments in Africa had created economic zones near main airports to accommodate, for example, agriculture and horticulture bases for export processing. Access to air services reduced the time and costs of transporting goods and passengers, allowing wider access to markets, and thus contributing to long-term economic development.

On average, tourists would spend 10 times more than the price of the air ticket in the destination country. The fastest growing African economies were those with the biggest share of tourism contributing to their GDP. Currently tourism contributed less than 4% of the GDP for the African region.

The economic activities and employment linked directly and indirectly to the existence of airports played a strategic role in developing a local, national, or even regional economy. As globalization enhanced the pace and complexity of production processes along with the accessibility of products and markets, the competitiveness of industries was increasingly relying on civil aviation.

### ***The aerospace industry's contribution to economic growth***

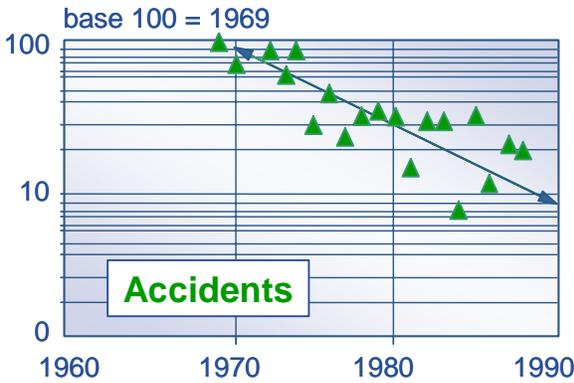
**Adam R. Brown, Vice President Customer Affairs Division, Airbus SAS**, discussed the growth potential in air travel and civil aircraft manufacturing, and their benefits to economies, especially for developing countries, from an aerospace industry perspective.

Intercontinental jet travel had been one of the most important drivers behind the trend to globalisation. The availability of frequent, affordable air services had transformed air travel from being a rare experience of the privileged few to a mass phenomenon, and had even driven a wave of offshore property ownership.

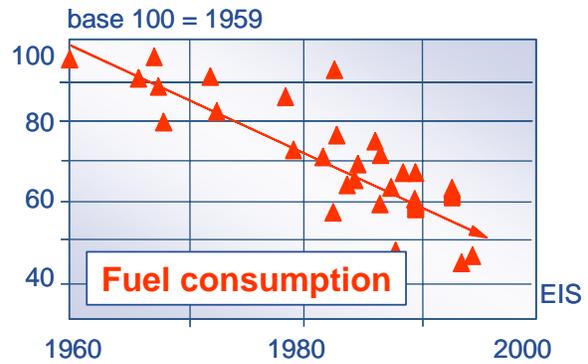
Modelling air travel growth had become much more complex, especially in leisure-oriented markets, because nowadays demand was more driven by consumer confidence and the affordability of the ticket than simply by economic growth.

Improvements in aircraft technology had had an impressive impact: accident rates and noise energy output had been reduced ten-fold (figures 16 and 18), while fuel consumption as well

## Maximizing Civil Aviation's Economic Contribution



**Figure 16:** The impact of technology improvements on accidents.

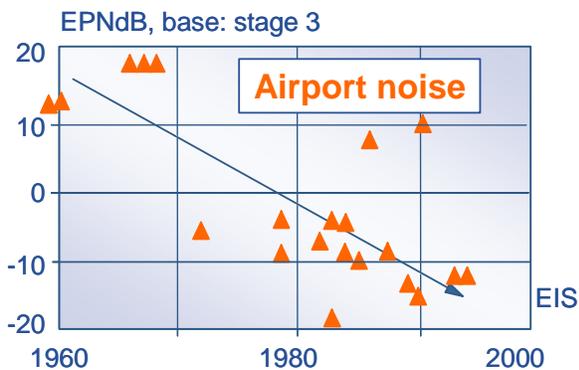


**Figure 17:** The impact of technology improvements on fuel consumption.

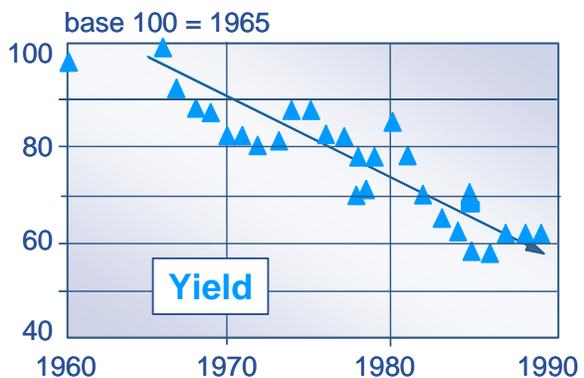
as associated emissions of aircraft engines had declined by 50%, as well as revenue yields in real terms (figures 17 and 19).

Despite a series of periodic slowdowns, worldwide air travel had grown ten-fold during the past 35 years, from some 350 billion revenue passenger-kilometres (RPKs) in 1969 to an expected 3.5 trillion RPKs in 2005 (see figure 20).

With the growing demand for air transport services, civil aviation gained a major impact on the economy, and civil aircraft manufacturing played an important role. In the US alone civil aviation supported a total of 11 million jobs and created some US\$ 900 billion of economic activity, representing 9% of US GDP.



**Figure 18:** The impact of technology improvements on noise



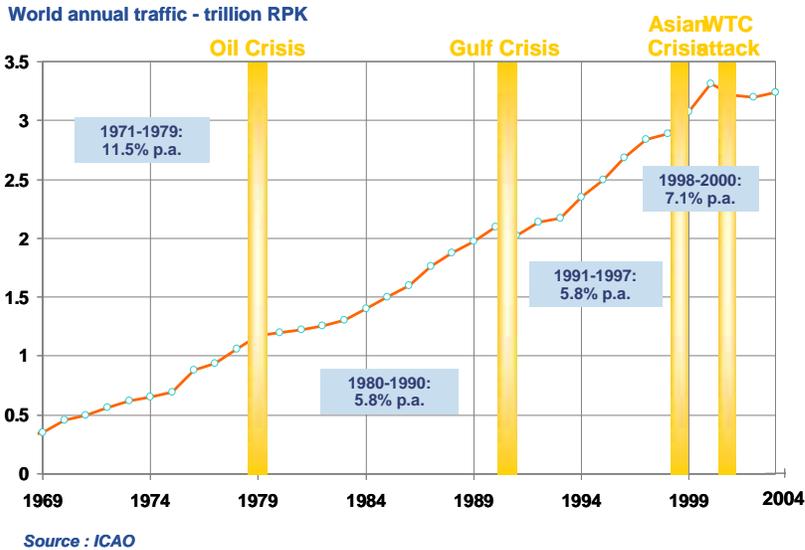
**Figure 19:** The impact of technology improvements on yields.

In view of its historically proven resilience, Airbus predicted that worldwide air travel would nearly triple during the next 20 years, growing at an average annual 5.3% to reach 9 trillion RPKs by 2023. This growth rate meant that in 20 years' time, air travel would be growing by about 390 billion RPKs

## Maximizing Civil Aviation's Economic Contribution

each year. In other words, by then just one year's **increment** in air travel would exceed the **total level of world traffic in 1969** when the Boeing 747 was launched (figure 21).

Obviously, growth rates varied widely between different markets. Some of the biggest air travel markets – for example, the US domestic market – had already largely matured. Highly populous and



**Figure 20:** Annual average growth of air traffic – World, 1969-2004.

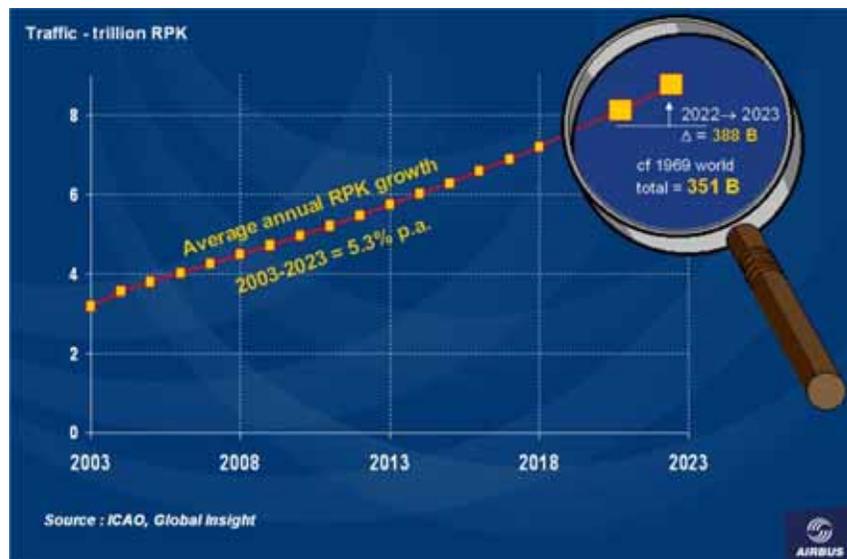
economically developing nations would be the engines of future growth. Their huge populations' propensity to travel by air would increase as their citizens' wealth increased, competition drove down air fares, and air travel became more and more affordable. As air transport to, from, and within developing nations grew, so would its contribution to their national economic development.

The market for civil aircraft, however, was huge (see figure 25). Over the next 20 years, it was estimated that airlines would take over 17,000

deliveries of new passenger airplanes (with at least 100 seats) or freighters, which had a value of some US\$ 1.9 trillion at catalogue prices.

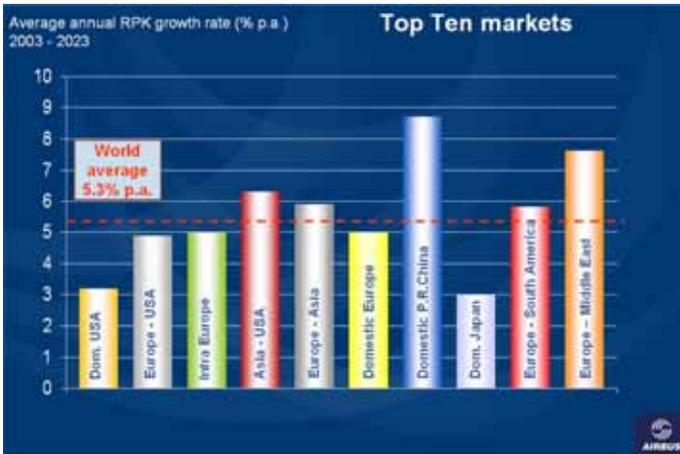
Manufacturing of civil aircraft, or contributing to the worldwide network of partners, subcontractors, and suppliers, combined several national interest incentives. It could focus the acquisition or development of advanced technologies, create high-level jobs, benefit the balance-of-payments (export revenues and import savings), and the end product could serve as a symbol of a nation's technological prowess.

However, modern civil aircraft were highly advanced products, which incorporated the very latest standards of structural, aerodynamic, systems, and propulsion technologies. Because of their advanced design, any nation hoping to engage in civil aircraft manufacturing had to master



**Figure 21:** Forecast of annual average growth of air traffic – World, years 2005-2023.

## Maximizing Civil Aviation's Economic Contribution



**Figure 22:** Forecast of annual average growth of air traffic – World, years 2005-2023.

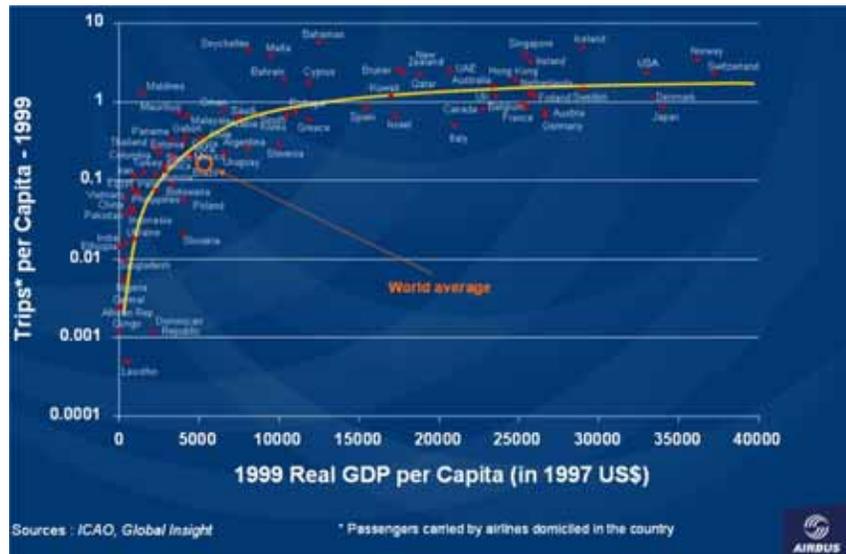
built elements of Airbus aero-structures. By 2007, this business was expected to generate an annual turnover of some US\$ 5 billion.

However huge the market may be, the global aerospace industry had likely created more than enough capacity to build all the planes the airlines was going to need. On average, the airlines needed 866 new airliners per year for the next 20 years (excluding the capacity impact of the new Airbus A380, which would reduce demand in additional aircraft), and the production capacity was now at about 940 per year, excluding regional jets.

One approach to avoid investing in additional capacity that may be beyond what could realistically be exploited on a long-term basis might be to use civil aviation as a technology driver. These new technologies could then be applied across a whole range of other industries.

the necessary technologies, which it either assimilated from nations, which had already created them, or invested in order to acquire itself. The non-recurring cost of developing a new type of large civil aircraft was now of the order of US\$ 10 billion. This investment was considerable, and the risk was huge. Even with a successful program, the industrial partners could not expect to see a return on their investment within less than 12 years from program launch.

Airbus had a global supplier base of more than 1,500 firms in 30 countries, apart from about 150 firms in Europe and 11 other countries around the world, that now



**Figure 23:** There is a huge potential for future growth in air travel to, from, and within the developing nations.

## Maximizing Civil Aviation's Economic Contribution

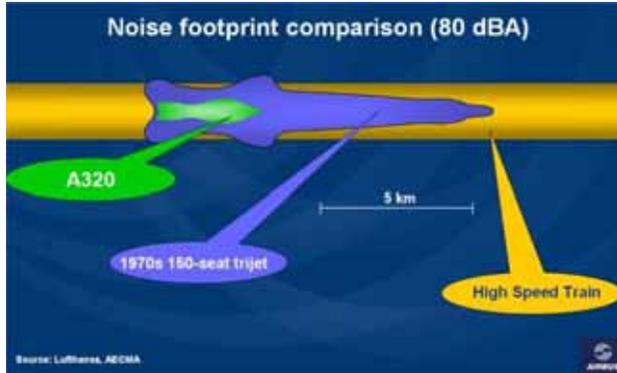


Figure 24: Modern aircraft are “good neighbors” in terms of noise.



Figure 25: Mainline civil aircraft are a US\$ 1.9 trillion market.

### Civil aviation's role in tourism

Geoffrey Lipman, Special Trade Advisor to the Secretary General, World Tourism Organization (WTO-OMT), discussed the interdependence between aviation and tourism in the context of how to empower the participation of the world's poorest countries. He pointed to the relevance of this challenge and potential for ICAO, WTO-OMT, and the World Bank as specialized United Nations (UN) agencies, all of which had committed themselves to the 2015 Millennium Development Goals.

With African countries, where development needs and opportunities were among the greatest, only air services could fuel their essential tourism agenda. Historical exports of commodities and agriculture had radically diminished in value through surpluses and subsidies, while the global tourism market had doubled in size and scope every decade or so. The global tourism market was now recognized as the world's largest and fastest growing economic activity.

Synchronization of the drivers and controls of, as well as between, aviation and tourism was much needed in order to realize, or optimize, their benefits for the world's poorest countries. This involved the supply of services, infrastructure, and human resource development. At the institutional levels, aviation and tourism entities were called to synchronize not only their policy formulation, but also their implementation strategies and their interface, starting with the national set-up, through bilateral agreements and multilateral institutions. At the policy level, the world trade and aviation trade regimes needed to be harmonized.

Furthermore, just as in other areas of trade, asymmetrical pro-poor development strategies would be needed if the least developed countries were not to be further marginalized by the liberalization process. The poorest countries had the least connected and lowest served aviation markets in the world, often served at highest cost by loss-making national airlines just when they needed good, reasonably priced air services the most to deliver their one service sector export where they had comparative advantage – tourism.

To help these states with practical actions, WTO-OMT had been working on two approaches and sought ICAO's collaboration for their advancement. A joint study had started, which tested the validity of the concept of *Essential Tourism Development Routes*. The idea was to recognize that there would be market failures in a liberalized aviation regime, and then create essential air service routes which kick-started support for societal (political cohesion) purposes. The concept was transferred from poorly served domestic markets of industrialized countries with a liberalized regional environment (U.S. and

## **Maximizing Civil Aviation's Economic Contribution**

Canada or EU) to the globalized setting and markets of poorest countries with a geo-political focus on Africa and other developing states. This initiative was recommended for development as a new model for bilateral and multilateral consideration.

The second initiative, called *SAFE (Security and Facilitation Enhancement)*, aimed at improving the global security network and facilitation measures by taking a systems approach and rendering support to poor countries that could turn out to be the weakest links. Development assistance and funding was required for aviation security for institution building, development or enhancement of national programs, procurement of equipment, and human resources management and development. Simultaneously, facilitation measures were needed to simplify the systems that tighten control and allow quality standards to be met in travel documentation, visa issuance, and passenger throughput. Otherwise, increased border and airport congestion would make the tourism product increasingly unattractive.

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### Session 2: Changes in Economic Policies and Regulatory Frameworks

**Douglas Andrew, Lead Infrastructure Specialist, World Bank**, the Session Moderator, stated that in terms of economic policies, airlines were in a very different, much more highly competitive market than was the case in the 1970s, with the advent of low cost carriers and single air markets. However, in many developing countries there were still fairly restrictive air service agreements, low if non-existent market penetration of low-cost carriers, and many state-owned airlines that continued to represent fiscal risks and performance problems for their countries. The question remained on what the mechanism would be to create a global, liberalized environment that, in addition, would satisfy the needs for international tourism. And related to that question was the role of government in air transport safety and security, and in economic policy for competition.

#### *The air transport regulatory scene globally and in North America*

**Susan McDermott, Deputy Assistant Secretary for Aviation and International Affairs, U.S. Department of Transportation (DOT)**, described the changes in the air transport industry not as cyclical, but as fundamental and profound. The industry could be segmented into different components – the legacy passenger carriers, financially troubled, the flourishing low cost carriers, regional airline traffic that was growing, and cargo and express delivery carriers that were doing well. September 11 had acted as a catalyst to, not as a cause of, the changes that were already affecting the industry.

The revenue model by the legacy carriers in the US was based on extracting the highest yields from business and non-discretionary travelers. The model worked because the market was more revenue-based rather than cost based – legacy carriers were able to control the total number of seats available for a given route. As the low cost carriers (LCCs) were able to increase the supply of seats, the business traveler was presented with more and lower cost options. Rather than supply driving revenue and prices, as had been the case for the last decades, now demand was beginning to drive supply. The traveler overall had become price sensitive.

Abroad, the demand had grown in the same way, and the development patterns were the same as in the US. Policy makers were confronted with two choices – to protect their legacy carriers through restrictions on competition, or to foster an environment that encouraged competition for low-cost services. The economic impacts of lowered air transport costs, however, were far broader, and encompassed the entire economy. Benefits went beyond direct travelers and shippers. They encompassed investment, import-export businesses, educational opportunities, and the industry of travel and tourism with its hotels, restaurants and cultural exchanges. This evolution was happening wherever policy makers viewed air transportation as not just an end unto itself, but as a generator of economic growth.

The world was moving more and more from bilateral towards multi-lateral and regional agreements. The US had been active both with bilateral and multilateral agreements, having open skies agreements with over 70 countries in all regions of the world. In addition, the US was now in talks with the EU for a bilateral agreement that would open markets for 25 countries.

European air transport markets led as the ultimate example of dropping all restrictions on aviation between the member states of the European Union. There were bold strokes on the part of other regional organizations. In Africa, the African Union (AU) had endorsed the Yamoussoukro Accord, which deregulated air transportation between all African nations. In May 2005, the AU held a Transport

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Ministers' meeting in South Africa to determine implementation plans for the Accord. In Asia, under the aegis of ASEAN, a roadmap for the integration of air services had been laid out, and several Asian nations – Singapore, Brunei, and Thailand – signed successive agreements liberalizing air services. Central American countries to a great extent had integrated their markets, and Caribbean nations were opening their territories to one another and even sharing airlines. South America seemed late to the consideration of regional liberalization, but some efforts were nonetheless underway. The Mercosur countries had liberalized services on new routes, and three countries had grouped together to sign open skies agreements with each other.

In today's economy, capital would move seamlessly from where artificial entry barriers (such as unnaturally high air fares) existed to where they did not.

In this climate, the role of Governments was to first and foremost ensure the safety and security of air transport operations, in close cooperation with ICAO and its audit program, and to adopt policies that allowed carriers to compete as freely as possible. Even the concept of liberalization was now being liberalized – today, third country markets were being opened to international carriers without the requirement of serving their country of origin.

Ms. McDermott also pointed out the strong role the US and the US DOT had been playing in trying to get other countries engaged in the new environment, both in economic regulation and in safety oversight. Many examples were presented, such as the assistance of the FAA with the East African Community, and the Safe Skies for Africa Program.

### ***European approach taken towards air transport liberalization***

**Ludolf van Hasselt, Head of the Air Transport Agreements Unit in the Directorate General for Energy and Transport, European Commission**, recounted the European experience in gradual deregulation and liberalization. He first spoke of the internal developments within the EC.

Fifteen to 20 years previously, members of the EU had highly restrictive bilateral agreements, with price controls, single destination limitations, capacity specifications, tariff restrictions, and so on. Unlike in the U.S., the opening up of the markets had taken place in little steps over time, with the most decisive step having been the 3<sup>rd</sup> Package of Aviation Liberalization in 1992. The package allowed for airlines to be established anywhere among the member countries, with free pricing and market access, and allowed cabotage.

Since then, new measures had been adopted to make this market and system perform even better. The European Sky project integrated air traffic management systems. Rules had been developed on ground handling, slot allocation, noise, security, and safety. All in all, the effort had been a big push towards liberalization in tandem with a big effort to improve the entire system even more.

This process of improvement, however, was not over. Congestion and the capacity of airports were newer issues, as well as slot allocations being made more market-oriented. In addition, there were continued worries about the environmental impact of the anticipated continued growth. Also, there was work on the transparency of airline tickets to the public. The establishment of the European Aviation Safety Agency (EASA) would bring together the safety overview of the 25 member states into one agency.

The success of European liberalization could be seen in a number of facts. There had been a very high increase in the number of airlines. The number of passengers carried was 580 million in 2003, of which

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370 million alone were in the EC. There were 450 airports, and 4,500 aircraft in service. Air transport provided 3 million jobs in the EC, and was 0.5% of the GDP. In terms of regulatory infrastructure, the fact that there were 60 separate air navigation service providers still needed to be addressed. Overall, however, passengers and consumers had greatly benefited.

Airlines' health, however, is harder to gauge, especially after the impacts of 9-11 and the SARS outbreak, Europe had seen a profitable year in 2004, with BA having earned € 587 million, Air France/KLM €351 million, and Lufthansa €383 million, all in spite of rising fuel prices and competing foreign airlines struggling with bankruptcy. The LCC market had expanded significantly, with Ryan Air and EasyJet competing in many markets with established carriers. These successes had all been accomplished without bankruptcy and state subsidies.

Mr. van Hasselt then posed the following question: Why were the European airlines doing so much better than their U.S. counterparts? Why were the US United and Delta airlines in dire financial circumstances, while the European legacy carriers seemed so much healthier?

Mr. van Hasselt's conclusions were that Europe simply lags five years behind the US in their market conditions, that LCCs were operating mostly in secondary markets and were not competing head-on with the legacy carriers, and fundamentally that European legacy carriers extracted their profitability mostly from international routes, with domestic routes only representing a small portion of their income in comparison to US carriers. He expected US carriers to be expanding more into international routes in the future.

In terms of external developments, Europe was now the "new kid on the block" in international negotiations. The Commission had formulated both agenda and policy priorities. In terms of agenda priorities, the EC wished (a) the focus to be on relationships with immediate neighbors (e.g. Balkans, Northern Africa), making sure their markets could integrate with each other, including their aviation aspects, and (b) to work with key markets for European civil aviation, such as the US, China, Russia, among others. The EC was limited in what it could accomplish all at one time, but it was clearly moving in this direction.

The EC's policy approach focused on

1. liberalization of market access, allowing airlines to compete,
2. allowing for foreign establishment, eliminating restrictions on foreign ownership,
3. allowing for more cooperation on safety regulation and oversight,
4. allowing for more cooperation on security (competing rules that hurt industry crop up easily), and
5. fair competition and the avoidance of state aids/subsidies.

The Commission's model was now visible at work with the EC's neighbors, such as Norway, Switzerland, and Iceland. Also, the model had led to negotiations with the US, and the EC would like to see the model implemented with other countries.

Mr. van Hasselt pointed towards risks he perceived with the US Open Skies policy – the bilateral system was not as effective as new approaches, especially given close cooperation in safety and security, i.e. if the safety and security framework already existed, there was not enough added benefit by the bilateral agreements. In fact the danger of bilateral agreements was that they could also lead to unilateral imposition of rules from one country to another. Examples were the US' imposition of security rules, and Europe's imposition of safety oversight with foreign carriers.

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### *Experiences gained with the air transport regulatory scene in the UK*

**Dr. Harry Bush, Group Director for Economic Regulation for the UK's Civil Aviation Authority,** pointed out that the UK market was very different. London was a major business hub and at the same time a common stopover for North America travelers. The regulatory framework today came from long-running experience in the regulation of utilities. As such, the UK market was possibly the most developed in Europe, with an increasingly competitive airline market (the UK had the earliest and now the highest penetration of LCCs), large investments in major airports and air traffic control, and a dynamic and privatized regional airport sector interacting directly with the airlines. The trend historically started with the early privatization in 1987 of British Airports Authority (BAA) and British Airways (BA). In the 1990s other airports became commercialized, and though not all went through this process, the act of some having successfully become competitive forced others to fall in line. The new economic regulations allowing for these changes were all within the context of the EC's 3<sup>rd</sup> Package. The national ATS was successfully privatized in 2001, and now Germany was planning to do the same.

Within the interplay of privatization, regulation, and liberalization, there was no single factor for the successes as they presented themselves today. Removing government through privatization helped, but liberalization, hand in hand with competition (BA would never have evolved to its current state without Virgin Atlantic, and in the short-haul markets the LCC had the biggest impact), and incentivising through economic regulation, played a role. The successes were compatible with world-class safety performance and the creation of successful businesses.

Dr. Bush continued on the accomplishments in regional aviation. Two-thirds of passengers travelled through the London's airports, whereas one-third from inside the regional structure. There were more than 50 regional airports, with nine having over three million passengers annually each. The system had shown stronger growth than London's airports: between 1990 and 2004 the regions' traffic grew by 150%, whereas London's traffic growth was at 95%. The nature of the traffic was both business and leisure, and although there had been more of a focus on short-haul routes, there was the beginning of a long-haul focus. There were now 16 daily routes leaving the regional airports flying to the United States. The most important economic benefit to the regions, besides tourism, employment, and inward investment, was the increase in business connectivity. The successes were achieved because of increased airline competition, more commercially-focused airports where airlines were able to negotiate with the airports, and the boosting of visibility and stimulation of consumer demand. Public intervention had been intentionally kept very limited, and only been applied in some of the extremities of the regions. Dr. Bush emphasized the danger of creating subsidy competition instead of commercial competition as a key reason for the limited public involvement.

The CAA was now trying to get their economic regulation more organized towards having airports and airlines determine their own needs together as a team before approaching the regulator, thus pushing the responsibilities down more towards the service providers. This was a process that was beginning towards the end of 2005, and was targeted for 2008. An important aim was to get the airports focused on their customers (the airlines), instead of the regulator, as they did today.

The UK experience emphasized the importance of not assuming that infrastructure needed to be controlled or regulated by government, but instead looking at each individual circumstance. Where economic regulation was indeed needed, one should try to incentivise the operator to improve performance, and try to harness commercial pressures and involved parties. It was important not to hamper new developments in the markets in this process, and to keep liberalization and competition in the forefront, thus enabling aviation to facilitate broader economic growth.

## Maximizing Civil Aviation's Economic Contribution

### **Questions and discussion highlights**

#### ***On policy makers' decisions on rights of establishment and mergers: How to reconcile mergers across borders?***

The right of establishment was a first step towards rights of ownership and control. It was a concept worked out with US partners that allowed a company to establish itself in another country with the ultimate goal of achieving liberalization of ownership and control. When moving towards multinational mergers, it was important that authorities discussed the respective implications.

#### ***On assisting developing countries to learn from the experiences of developed countries:***

Developed countries had an obligation to assist developing countries to gain an understanding of how they had got to where they were now, especially with respect to infrastructure development. The aviation deregulation experience in the US, and liberalization experience in Europe, had been difficult to implement, and lessons learned could assist developing countries. In the US at present, safety and security were at the forefront. ICAO was making safety and security standards uniform, and had programs in place to assist with capacity building. Developed countries could also learn from developing countries. For example, the catalytic impacts of air transport were well known, but what was needed was for regulators to carry out specific impact studies. The issue was how this could be addressed.

#### ***Views on airline liberalization process linked to the World Trade Organization (WTO-OMC):***

Europe had made suggestions to move towards an inclusion of air transport services in the international trade negotiations under the auspices of the WTO-OMC. Although this enlargement of international trade in services could bring significant benefits for civil aviation, there is considerable resistance against an inclusion. Some suggested that evolving aviation into the WTO-OMC was not the way to go. The US Government had taken the approach of having an established bilateral system become the foundation of what may eventually be submitted to the WTO-OMC in order to avoid a weakening of a multilateral agreement on a set of standards to be crafted in future. Also, when arguing against protective barriers, people needed to look at aviation in terms of the overall economic growth it could bring, rather than growth just in the aviation sector.

#### ***On if regulators should make impact assessments on the overall ripple effect of the cost of regulation:***

Regulators looked at costs and their impacts. Costs were proliferating, particularly in terms of safety, security, and the environmental impact of air transport. These were some of the fixed costs that operators would have to accept, and were part of the society they operated in. Competitive airlines would be looking for other areas to find costs savings.

#### ***On the equilibrium between liberalization, privatization, and public intervention, including the aspects of asymmetrical information, in particular with technological information:***

Finding equilibrium was a case by case process, and varied from country to country and from infrastructure to infrastructure. In terms of asymmetric information, the private sector was always in a better position than the regulator, which made it vital that the regulator only intervened where the regulator actually knew that *something* needed to be done, and *what* needed to be done.

## Session 3: Changes Affecting Air Carriers, Infrastructure, and Technologies

### Air carriers

**Ralph Thompson, Director for Infrastructure Strategy, IATA**, headed off the topic by discussing the crisis state of the industry today. He explained there were 40 million flights per year, 1.9 billion passengers were being moved, and the industry had about US\$ 400 billion in operating costs. In 2005, the fuel bill was estimated to be US\$ 83 billion, compared to US\$ 39 billion in 2003, and forecast losses were around US\$ 6 billion. Breakeven for airlines had been calculated at US\$ 32 per barrel of oil. For most of 2004, the barrel of oil was estimated at US\$ 43, and today it was over US\$ 40. The issue was to be able to provide good service for a fair price, not good service provided *below* operating costs. Part of the problem was that while airlines were losing billions, others, particularly those with monopoly services (such as airports and air navigation service providers), managed to be profitable – i.e. the value chain was not evenly distributed.

At the 2004 IATA Annual Meeting, the emphasis became a) simplifying the business models of the industry, b) overall safety (IOSA), c) savings through a fuel campaign, d) the environment, and e) a global air traffic management (ATM) roadmap.



**Figure 26:** Jet hull losses worldwide for year 2004. Africa has the highest loss rate. Source of data: IATA.

In the simplifying the business model, IATA had chosen as priorities electronic ticketing, common check-in automation machines (“CUSS”, for “common use self service”), radio frequency identification for baggage (RFID), bar coded boarding passes, and a paperless environment for cargo operations. In terms of e-ticketing, 40% of IATA members were expected to be “on-board” by end-2005, 70% by 2006, and 100% by 2007, saving US\$ 9 per ticket. With 1.9 billion passengers a year, this would amount to an industry savings of about US\$ 17.1 billion.

The year 2004 has been the safest on record so far, and IATA saw safety as its number one priority. Western built hull losses had decreased from 0.87 to 0.78 per million sectors between 2003 and 2004, and 0.65 was the target set for 2005. There were, however, large regional differences – Africa had 10 times the hull loss rate than the world average (see figure 26). Key here was IATA’s six-point safety program, which contained IATA’s safety audits of member airlines (IOSA), infrastructure safety, incident and accident data management, training, cabin safety, and cargo handling.

Traditionally, airlines in partnership networks (alliances) were required to audit each other in terms of safety. One of the advantages of the IOSA program, which was in close cooperation with ICAO’s standards and safety audits (USOAP), was the ability to centralize this auditing process. Instead of airlines having to do costly and time-consuming audits of each other, they were able to simply look up a

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partner's IOSA audit record. In addition, IOSA certification had enabled airlines to negotiate lower premiums with insurers. Overall, there had been over 70 IOSA audits worldwide by May 2005. Africa, with the highest jet hull loss rate, had not yet had any IOSA audit, making the continent ripe for improvements in airline safety. IATA was funding the beginning of a safety partnership in Africa through the IATA Partnership for Safety (IPFS).

In 2004, the traffic growth globally had been about 13.4%, whereas the amount of fuel consumed had been only 10.0%. The 3.4% difference represented an overall gain in fuel efficiency by the industry, with savings of about US\$ 2 billion. Fuel efficiency clearly had an impact on the bottom-line of airlines. IATA was looking to improve efficiency through route optimization (e.g. one simple route change over Kazakhstan and China would save 30 minutes per flight, and US\$ 30 million per year to airlines), more efficient airport operations (there were seven selected airports that could create savings of between US\$ 175 – US\$ 350 million per year through operational changes), ATC efficiency gains (a “One Minute” less per flight campaign was targeted to save US\$ 300 million per year), and helping airlines with operational best practices.

ICAO had recommended an industry-wide global road map for air traffic management (ATM). IATA developed such a road map in May 2004, and in October 2004 the industry provided delivery, in cooperation with the FAA, EUROCONTROL, Boeing, Airbus, Thales, Honeywell, Rockwell Collins, ARINC, SITA, INMARSAT, IBAC, CANSO, etc. ICAO accepted the road map as a global plan in January 2005. Industry was challenged to examine and improve on 11 parameters (safety, security, access/equity, capacity, cost effectiveness, efficiency, environment, flexibility, interoperability, participation, and predictability) simultaneously, with a formal plan being issued in late 2005 or early 2006.

**Rod Nelson, CEO of Air Niugini**, represented the view of the industry from the perspective of a state-owned airline based in a developing country. Papua New Guinea was an Asian Pacific developing nation with a population of about 5.5 million, GDP per capita of some 2,586 Kina (between US\$ 800 – US\$ 900), and GDP growth of about 2.4% in 2004. There was no extensive ground or road network, so dependence on aviation and shipping was high. Air Niugini was established in 1973, enjoyed a high national profile, was essential for domestic and international linkages, and because it was an icon, was also an easy target with respect to the press and negative publicity. With a fleet of 14 aircraft and a staff of 1,324, the airline had moved 531,000 international and 204,000 domestic passengers in 2004, with international connections including but not limited to Australia, Singapore, Sidney, Malaysia, and Tokyo, and with an extensive domestic route network.

The airline was facing many drivers for change – it had been a continued financial failure up to 2002, with accumulated losses of 180 million Kina, and a negative balance sheet with massive debts to banks, financiers, suppliers, and tax authorities. The internal causes of the difficulties were board and management instability (there were 24 directors and five CEOs and acting CEOs between 1999 and 2002), poor judgment (e.g. there was a direct Port Moresby, Papua New Guinea to Sydney, Australia service with unsustainable fares and only a 20% load factor), cumbersome bureaucratic structure, ageing high maintenance fleet, poor capacity utilization, bad overall market conditions, and inadequate aviation infrastructure (domestic night flight was virtually impossible). Externally, the airline was exposed to natural disasters, political instability, a deteriorating national economy, increases in fuel prices, a struggling tourism industry, the events of September 11 and the SARS epidemic, and the overall competitive environment of the airline industry.

The crisis was recognized both by the board of the airline and the Government in 2002. Survival now depended on reducing costs, improving the corporate structure, increasing productivity, restoring profitability, generating cash flow, reducing debt, improving the corporate culture, updating the fleet,

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becoming more flexible overall, and developing a holistic strategy. Management practices were changed, ranging from the selection of the executive team over the selection and monitoring of key performance indicators to the overall board and management decision making. New business strategies included, amongst many other items, a code sharing agreement with Qantas, started in 2002, pricing policy flexibility, investment in IT, and reflecting. An enhancement of the airline's marketing efforts included wholesale holiday programs, wholesaling to niche tourism markets, sixth freedom marketing to Asian destinations, attention to European and U.S. markets, efforts in 6<sup>th</sup> freedom cargo exports, and attention to the Papua New Guinea mining sector.

In 2003, the airline turned its first net profit before taxes of 52 million Kina, on a turnover of 421 million Kina. In 2004, profits increased on a turnover of 436 million Kina. Currently, the YTD financial results were on budget, and the balance sheet was stronger with no bank debt and all trade creditors up-to-date.

There were several challenges and opportunities facing Air Niugini today. The Papua New Guinea CAA had not been able to keep its airports up to even its own standards. There were issues with airport security, airport facilities, and navigational aids. Challenges developing in the markets included fare competition, fuel prices, the profitability of individual routes, and the role of the airline as a tourism and exports developer. Also, the culture within the organization needed to focus on continuous improvement and productivity. Long-term viability issues included investment in a new fleet, the impact of LCCs, finding profitable growth, adapting to e-ticketing and e-commerce, negotiating the Qantas code sharing agreement beyond 2007, and looking at the ownership structure/privatization.

Air Niugini was owned 100% by the state of Papua New Guinea, with the shareholder being the Independent Public Business Corporation (IPBC). One of the strategic directions of the IPBS was the development and management of PPPs. Air Niugini had a failed privatization attempt in 2000/2001 under previous government. The current government may attempt a partial privatization initially, though similar attempts had failed in the telecoms industry. The question of privatizing the airline, which would not happen before 2006/2007, would perhaps depend on four years of positive performance, an enhanced balance sheet, and the Qantas code share extension beyond 2007. Privatization would be advantageous because of the new capital structure, reduced government involvement, and industry linkages and synergies.

### **Airports**

**James C. Cherry, President and CEO of the Aéroports de Montréal**, described the dramatically transformed airport industry, which had gone from a collection of independent, non-profit, government-owned entities to featuring a number of global commercial enterprises with a great variety of public and private ownership arrangements. This global trend was driven by deregulation that began in the 1970s and spread throughout the world. For the first time, airlines could set their own prices, travel times, and destinations, with tough competition being the result. Since airport customers became more diverse, airports no longer had to depend on one mainline carrier for revenues. In fact, airports relied increasingly on non-airline revenue sources such as retail, concessions, and parking. In Montreal, for example, only one third of the revenues were aeronautically driven, with another third coming from commercial activities, and the last third from passenger facilitation fees and rentals. Some airports had entered into businesses such as hotels, duty-free shops, catering and retail centers, and were exporting their knowledge and systems to other airports via consulting and management contracts.

This trend also led to detrimental effects. Deregulation had strained airport infrastructure as traffic volumes increased at unexpected rates. Investment to meet demand, to improve the quality of services, and to compete with rival airports far exceeded the availability of public resources. And since

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governments could no longer provide for all the needed investments themselves, they were now looking to the private sector to provide the required funding in exchange for long-term lease agreements, concessions, or other forms of contracts that allowed recovery of their investments.

Two examples of success were the British Airports Authority, sold 100% to the public, and the publicly traded Vienna International Airport. Heathrow's "shopping mall with runways" concept allowed airports to keep airport charges as low as possible to attract airlines. Vienna International Airport generated millions of dollars in revenue each year with a variety of shops catering to European and non-European travelers. Publicly traded, the airport created the Vienna International Airport Group to develop new international business for the company, and was now majority owner of a consortium that was awarded the concession for the Malta Airport.

Internationally, the momentum for airport privatization had increased since September 11, though the US had been slow to respond, operating mainly on the non-commercial, non-profit business model, with nearly all airport authorities restricted to operating airport facilities in a single metropolitan region.

The Canadian model was more of a hybrid. Prior to 1991, the Government owned and centrally controlled 150 locally-managed airports in Canada. Airports had no responsibilities to their communities and, subject to fiscal constraints, were starved of capital to upgrade their infrastructure. Airports were also subsidized by taxpayers by CA\$ 150 million annually.

Canadian airports were first transferred to local airport authorities in 1992. Today, the National Airports System (NAS) comprised 26 strategic airports operated by local non-share capital, not-for-profit airport authorities. NAS airports received no support from the Federal Government, which retained ownership of the land, received rent, and played only a regulatory role. All operational costs and capital improvements were now borne by the local operator. Additionally, airports had expanded their service offerings through attractive "shopping" terminals and new passenger service technologies such as automated check-in kiosks. The model was considered a success – more than CA\$ 8 billion had been invested for infrastructure, the eight largest airports generated CA\$ 1.5 billion in revenues in 2003, and 305,000 people had been employed. The overall economic impact of Canada's airports was estimated at more than CA\$ 35 billion.

However, very high federal rents, in addition to airport security taxes paid by passengers, had proven to be major constraints and impediments to infrastructure renewal and industry growth in Canada. Though a more drastic and immediate reduction of rent was sought, a recently announced government rent reduction scheme would be beneficial in the intermediate term. Also, the Commons Standing Committee on Transport's Interim Report on Air Liberalization and the Canadian Airports System recognized the hidden cost of providing, amongst other items, free office space and more to government agencies, and called for their elimination over a five-year period.

Mr Cherry elaborated on Aéroports de Montréal, which was formed in 1992 with the mandate to manage, operate, and develop Montréal's two main international airports, Trudeau and Mirabel, under a 60-year lease, and was financially independent, responsible for costs and investments and generating funds from airport activities, including collection of an airport improvement fee, as well as long-term bonds and bank loans.

The use of the airports had been restructured, with all passenger flights having been transferred from Mirabel to Trudeau to improve connectivity, passenger convenience, and cost efficiencies. Mirabel was now a cargo hub. Aéroports de Montréal itself had also undergone a radical transformation in its corporate management to improve efficiency, accountability, and transparency, with new principles of accountability, a new board of directors, and a community advisory board.

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The Trudeau modernization and expansion project would double capacity to 15 million passengers, with the main components already in-place, and Trudeau having turned into a major hub. Trudeau reflected a careful approach having emphasized functionality and extensive consultation with airlines during design and construction. Besides other enhanced services, Trudeau was now the world leader in the use of CUSS kiosks, and iris-recognition technology expediting customs and immigration formalities.

In addition, Aéroports de Montréal had been a catalyst to aero-industrial development, with 16 of the 23 plants operated by world-class aerospace players in the region on or near Aéroports de Montréal sites, benefiting from the availability of land and nearby logistics facilities.

In conclusion, the old government model had been to get planes in and out, move passengers on and off, and attempt to cover costs, whereas the new commercial model was service and convenience oriented, with diverse business models tuned to generate surpluses to fund expansion and modernization and provide a return to the owners. A new entrepreneurial management style had emerged, with the objectives of maximizing all possible revenue sources, exceeding the expectations of all customers, covering all costs as efficiently as possible, and of making a real return on the overall cost of capital investment. Both airlines and passengers would be getting significantly better airports as a result.

### ***Air navigation services***

**Howard Goldberg, Director of Insurance and Risk Management, NAV CANADA**, and also the Representative of the Civil Air Navigation Services Organization (CANSO), spoke on the harmonization of global air traffic management. The individual elements of ANS – research and development, technology, airports, ATM, airlines, the passengers themselves, and with particular emphasis the security components associated with each, were in no way harmonized into a whole. Reasons for harmonization were customer demands, safety, costs, capacity, the current expenses in the ATM community (which were unaffordable), and the current fragmentation and complexity. Harmonization would create global standardized systems and procedures (with their related markets), shorter product development time with lower risks and costs, improvement in reliability, contingency planning and budgets, and would require less training, maintenance, and inventories of spares.

The global ANS system was highly fragmented with regional, national, and sub-national components. Systems choices resulted from unique national political choices. Nations created unique economic models and service provider structures, and those service providers in turn developed and purchased unique national systems and applied unique operational features. Multiple standardization bodies were created to de-fragment the system. In addition, there were different models of service providers in terms of governance, such as privatized for profit organizations, privatized non-profit structures, corporate for and not-for profit structures, and governmental agency organizations.

There were eight barriers to harmonization, namely national sovereignty, the regulatory environment, the highly fragmented nature of the harmonization process itself, differing operational concepts, the uniqueness of the ANS culture, ATC standards and procedures, legacy systems and outdated technology, and diverse safety management systems.

**Eberhard Söhnle, Head of the Economic and Regulatory affairs Unit in the Central Route Charges Office, EUROCONTROL**, discussed the significance of economic regulation with regard to air navigation charges. In Europe, prior to 1971, charges for air navigation services were not regulated. From 1971 onwards, the principles of full cost recovery were applied, with the supply side being regulated with cost accounting principles established by EUROCONTROL based on ICAO principles,

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and the demand side being regulated through charging formulas such as ex-post allocation of average costs to airspace users. From circa 2001 onwards, ICAO recognized “other economic principles”, including mechanisms for economic regulation of ANS charges. Since 2004, there had been the Single European Sky framework regulation and corresponding implementation rules in the EU, providing for incentive regulation of charges.

There were two forms of regulation – soft regulation and economic regulation. On the soft regulation, there were rules on information disclosure, performance measurement, benchmarking, target setting, and economic oversight, whereas on the hard (economic) regulation, there were price caps and rates of return regulations, and additionally rules on financial incentives and the modulation of charges (i.e. charges taking into consideration, for example, the congestions of airspace or the environmental performance of aircraft).

The basic principles of the regulatory initiatives in the Single European Sky were that

- the user pays for the services,
- there was equity between airspace users,
- there be a level playing field for ANS providers,
- there be a gate-to-gate perspective (i.e. regulation of charges by both airspace ANS and airport ANS),
- the charges be cost-related, and
- there be transparency for, and consultation, with the user.

The objectives were safe, efficient, and cost-effective service provision, optimal allocation of resources, provision of sufficient capacity to meet demand, and an organization of ANS service provision independent of national boundaries.

The impact and expected results of the regulatory measures were a decrease in the costs of service provision, improved quality, better use of existing airspace capacity, investment in new capacity, re-direction of traffic where needed (allowing for competition for traffic), positive change on the financial position of service providers, and overall restructuring of service provision generating new economies of scale.

In conclusion, economic regulation of ANS charges addressed both the supply and demand of airspace usage. Furthermore, it stimulated cost-effective service provision, sent correct pricing signals to airspace users (further providing for better use of airspace capacity), and incentivised service providers to meet demand.

### ***New technologies***

**Lionel Wonneberger, President, Air Traffic Alliance**, discussed new technologies for air traffic management (ATM). He started by explaining why new technologies were needed in ATM – overall growth in cargo and passenger volumes and movements, the conflicting objectives in the air transport industry's operations, the high number of decision-makers in the air transport network, and the disparate collection of systems found in aircraft, satellites, ATC centers, communication networks, and airport and airline operations. The industry's objective, therefore, was to implement a safe, secure, and globally interoperable system that multiplied capacity for future growth, cut costs, reduced ATC and airport delays, and preserved the environment. The industry intended to accelerate the rate of ATM changes and focus efforts and investments on major ATM changes. New technologies, however, came **after** the development of an implementation process.

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The Air Traffic Alliance was a joint venture between EADS, Airbus, and Thales, focusing on regional and global ATM changes through not a technology-driven but a process-driven approach. The Alliance was implementing the SESAME European ATM program initiative.

SESAME was a strategic program for the Single European Sky, and had a definition phase study from 2005-2007, with the implementation phases starting in 2007 and going to 2020 and beyond. In the proposal for the definition phase, about 50 organizations were grouped into one unique European air transport consortium, leading to unprecedented cooperative work between European ATM stakeholders. The expected outcome was a broad air transport industry commitment for the optimum ATM solution for Europe, and a realistic implementation plan.

In a global perspective, the industry was trying to move to a system of common standards for ATM. Key pillars for this system must be much higher ATM performance in terms of capacity, safety, security, environmental aspects, and economic efficiency, a harmonized operational concept for airspace and airports, an integrated technology for aircraft, flight data processing, and controllers, a human-factor solution allowing pilots and controllers cope with much more traffic in the same airspace, and a harmonized regulatory framework. The most essential concept was the global harmonization of equipment and standards, which should be supported by ICAO, governments, aviation institutions, regions such as US and Europe, and the overall air transport industry.

### ***Questions and discussion highlights***

#### ***On the example of Mirabel Airport, Montreal:***

Mirabel Airport was provided as an example of an airport that had received significant investment, but which was close to closing. There were a number of lessons that could be learned from this example by airports in developing countries trying to attract air carriers:

- The Mirabel airport development project was over-optimistic.
- Demographic and political factors were not taken into account.
- Transport infrastructure to provide access to the airport was not addressed, which was a big problem. The government of Quebec provided authorization to build the airport but would not provide the road.
- Another problem was that international traffic was moved to Mirabel, keeping national traffic at Trudeau.

#### ***On the example of Alaska, and developing countries:***

Alaska had 126 rural airports, and was one third of the size of the US. Although located in the developed world, this region had common problems with Africa: getting pregnant women out of remote areas in bad weather was challenging; there was a need for a hub and spoke system; there was a necessity for overall advocacy. However, regions like Alaska were not being served by ICAO, which tended to focus on the bigger picture (large airports and big airlines).

It was noted that in many developed countries, there was a problem with congestion in the airspace and on the ground. Yet ironically, developing countries were keen to become more congested! In the context of privatization of the air transport industry, there was the issue of critical mass. The problem for Uganda, for example, was that the level of economic activity was relatively small. How could this situation be addressed? How could the private sector be attracted to invest in the country?

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### *On Air Niugini's appearance in a fully liberalized environment:*

In a totally liberal environment, it was expected that the airline would be somewhat larger and further ranging internationally, and somewhat smaller domestically, intentionally wanting others to serve the domestic market. Tourism industry growth over 5-10 years could alter these projections.

### *On the example of the new Bangkok Airport:*

In Bangkok, an airport was being developed that was 70 times too big for the needs of the airlines serving the city. The authorities had not consulted with IATA at the outset. Had they done so, the authorities could have avoided an overly costly development. When considering the development of an airport, it was important to know what was or was not needed, and to involve all relevant stakeholders. It was in the interest of the airport to ensure they developed an efficient facility with a sufficient number of passengers to use their shopping facilities.

### *On the concept of incentive charging:*

The point was made that the air transport industry was in a perilous state and that driving costs down, especially for the airlines, was an absolute necessity. Modulated air charges were not considered a good approach by the airline industry. At EUROCONTROL, however, such charges might still conceivably happen, possibly based on congestion, equipment on board aircraft, and environmental performance.

### Session 4: Challenges for Air Transport, and the Subsequent Panel Discussion

**Dr. Triant G. Flouris of the Republic of Cyprus**, acting as session moderator, summarized the challenges facing the air transport industry today. Three areas were to be addressed: the capacity of the system, the environment, and safety and security, with a focus on two questions:

1. How could change within the air transportation system be accelerated quickly enough and directed with enough agility to avoid problems and achieve future goals while managing
  - (1) the influence of increased demand and other external pressures, and
  - (2) conflicts between different goals and stakeholders?
2. How could the system be prevented from changing too slowly, drifting, or going in the wrong direction?

For a new system, the future vision should be supported by research and technology goals leading to improved performance. Measurable long-term targets supported by sound analyses should be established to assess progress toward the goals. Research should support the establishment of quantifiable goals in areas where progress is difficult to measure.

#### **Airlines**

**Dr. Andrew Sentance, Chief Economist and Head of Environmental Affairs, British Airways**, began by outlining three broad issues that would underpin the challenges to face airlines, and shape the economic contribution airlines can make:

1. The structure of the industry
2. The role of governments and international institutions
3. Environmental and infrastructure constraints

With regards to the structure of the industry, airlines in general had been unprofitable over the decades, with passenger airlines making an overall operating margin of 3-4%, according to ICAO data, as a return to sales. A rate of 7-8% was probably more sustainable (BA targets a 10% profit margin). In order to increase the economic contribution this would have to be addressed somehow in a structural sense, and there was a challenge for the industry to better manage itself. Poor management had been encouraged by a whole range of factors, and there had been government intervention of some sort over time because of the issue.

Another new structural issue, especially in the US and Europe, was that there were new types of airlines emerging in the form of the LCCs. The question was whether these LCCs made a stronger economic contribution to the developing and emerging markets, where there was a particular need for low cost air travel.

The second topic was the role of government and international institutions. The view often presented was a model based on private enterprise and liberal markets, and letting that model present its benefits to society as it did in so many other sectors. If one accepted that premise, the question was how to stop various government overt and covert subsidies from creeping back into the industry. Or, if one did not accept this premise, how did one make sure that government intervention was subject to certain rules as in the case of certain world trade arrangements like the WTO-OMC? There was a question of making

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sure that the private sector liberalized model could function at a level playing field across the global economy.

Also an issue was *who* was going to be the champion on liberalization among the international institutions? Some people were questioning if ICAO could fill this role. Some voices suggested the WTO-OMC, and others said the U.S. would be the voice of liberalization with their bilateral open skies policies.

The third topic the airlines needed to address was the question of adequate infrastructure to support growth, and the environmental aspects of growth in aviation. Who was responsible for developing the infrastructure – the government or the private sector? Also, looking at the growth projections presented, one had to ask the question about the realism of those projections, in light of the environmental constraints on noise and emissions the industry faces.

Answers to all three main issues would let the airlines make a strong economic contribution.

### **Infrastructure providers**

**Mr. Pierre Coutu, Senior Advisor, Airports Council International** (infrastructure, airports), stated that ACI's basic purpose was to advance the interests of airports, and to promote professional excellence in airport management and operations, with considerable emphasis on the latter.

In the changing world of aviation, the liberalization of air transport in particular had an impact on airport planning and airport revenue sources. The emergence of private and foreign ownership was of interest. Also, there was a high opportunity cost if one either over- or under invested in air transport infrastructure. In terms of capacity and capacity planning, Mr. Coutu pointed out the underestimation of passenger traffic for 2000 made by many airports in 1987 (see table 2 below).

There were three major influences that had a direct impact on airports – changes in the airline market, changes in airline hubbing and alliances, new security requirements after the events of 9/11, and the emergence of LCCs.

The volatility of the airline market was one of the causes that led to airport commercialization, besides the fact that governments no longer had funding. This created the challenge of running airports as business enterprises, i.e. client oriented.

Airport	1987	2000 (1987 forecast)	2000	2001	2004
Amsterdam	18,8	25,0	39,6	39,6	42,5
Atlanta	47,7	77,0	80,1	75,8	83,6*
Chicago	58,8	82,3	72,1	67,4	75,5*
Frankfurt	23,3	32,0	49,4	48,6	51,1*
Hong Kong	12,7	30,5	32,8	32,5	36,7*
London	34,7	58,0	64,6	60,7	67,3*
Singapore	11,2	20,0	28,6	28,1	30,4*

\* 2003 pax traffic was lower than 2000

Though one of the key elements today in airport planning was the master plan (ICAO recommended, industry standard), often missing was a *strategic business plan* with some emphasis on the financial implications. Airport planning today needed to be more flexible and scenario-based. Many airports in the world were still developing forecasts that were correlations of GDP or tourism, which was not really developing new markets. The planning had to be proactive, interactive, and should include dialogues with clients. And airports needed to be flexible in their planning, using projections with upper and lower limits and averages in their assumptions.

**Table 2:** Estimated passenger traffic by airports in comparison to actual traffic.

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The increased complexity of planning and managing airports required human resources with new skills. The ACI mission statement contained the phrase "...to contribute to increased cooperation, mutual assistance, information exchange and learning opportunities for member airports." Recently, ACI had created a global training hub with an emphasis on e-learning, and was looking closely at cooperating with the World Bank on the Global Development Learning Network with regards to infrastructure training and conferences worldwide. Also, ACI was coordinating with universities offering advanced degrees in aviation.

Another issue impacted by the developments in the industry was that of airport governance. The emerging philosophy now was on ensuring decisions were made at the level of impacted communities, and increasing the role of municipal and regional governments. Centralized decision-making was too complex and inefficient, and stretched the response time. Mr. Coutu emphasized that research was needed on the relationship between airport boards of directors and the related regional and municipal governmental bodies, and on the distributed nature of governance and accountability, the optimal arrangements for decision-making authority, accountability, structures, and processes. Airports were important for economic development because they represented gateways for cities in a networked society, and impacted the status of a metropolitan region. Airports also gained economic importance when they developed into "Airport Cities", as found in Asia.

The increased need in investments and expertise had led to strategic airport-to-airport alliances, where two airports directly agreed to support one another both financially and managerially. One example was the strategic partnership agreement signed between the Qingdao and Munich airports on April 18, 2005.

### ***Aerospace manufacturers***

**Adam R. Brown, Vice President of the Customer Affairs Directorate, Airbus SAS**, made the observation that one should perhaps not seek to find solutions with a global view, but look rather in detail. There seemed to be divergences developing in which airlines in different regions or nations were evolving – for example, the airlines in the largest and freest markets were receiving government support and yet were doing rather badly, whereas elsewhere in the world airlines independent of any support were changing behavior and meeting market demands. Perhaps looking at air transport on a nation by nation basis rather than globally would be a better way to see and examine where issues lay.

### ***Policy makers and regulators***

**Robert J. Shuter, Director, International Aviation and Technical Programs, Transport Canada**, began by highlighting the importance of safety and security standards in an expanding marketplace with higher and higher volumes of traffic. He pointed out that traditionally regulators directly inspected operations with their own resources, in contrast to today, where airlines certified their own auditing process with the regulators. The shift of responsibility was *from* the government regulator *to* the operator. This shift was necessary because of the increase in resources needed for oversight. If the current rate of accidents remained the same, by 2015 the sheer number of accidents, though still occurring at the current rate, could hamper growth because of an increased sense of fear by the flying public (see figure 27). The necessary conclusion was that flying had to become even safer than today, with lower accident rates.

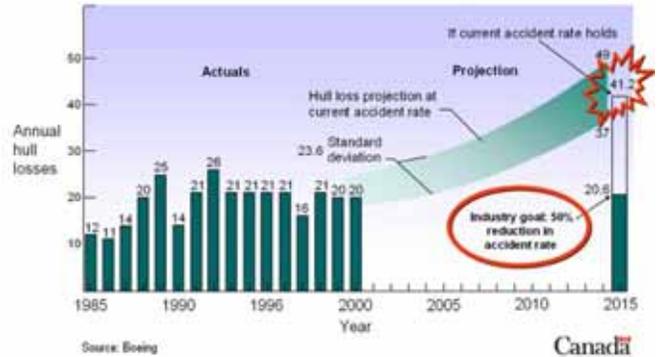
The management approach to human and organizational risk factors was called the "Safety Management System" (SMS), and had six core components:

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1. there was a structural safety management plan that went as far as examining the structure of the entire organization involved,
2. there was careful documentation,
3. everybody involved was being trained,
4. there was now a pro-active safety oversight component versus just the traditional reactive enforcement,
5. an ISO-type quality assurance process was implemented, and
6. there was an emergency response plan that addresses not just major, but also small and minor occurrences that could influence overall safety.

The expected results of Safety Management Systems (SMSs) within Canada were to lower the

accident rate, reduce Transport Canada's dependence on specialized technical skills, and reduce overall operating costs, not just for the regulator, but also for the operator. One of the unique advantages of the SMS was the ability, via software, to spot safety-related problem patterns that could not only be used to prevent more serious accidents, but could also to lower costs by identifying faults that would otherwise perhaps not even be noticed.



*Figure 27: Worldwide hull loss projection based on expected fleet growth (data source: Boeing).*

Mr. Shuter then discussed the environmental aspects and challenges facing air transport today: noise, pollution, and the impact of the Kyoto agreement. In terms of noise, aircraft today were much quieter than the original turbojets or first generation turbofans. However, as traffic volume increased, the cumulative noise of the quieter aircraft would also increase, while at the same time the room for finding technological solutions to aircraft noise was running out. The result was a growth in airport noise restrictions, limiting traffic growth. Aircraft emissions, too, now faced a technological limit in gaining additional efficiency in combustion. In addition, there was an inverse relationship in the production of two compounds of concern – reductions in carbon dioxide pollutants increase emissions of nitrogen oxides. Among strategies highlighted by ICAO were operational changes such as route changes, less idling and taxiing time, usage of ground-based electrical plug-in power supplies rather than fuel-burning auxiliary power units, and others. Expected operational efficiency gains were between 8-18%, not counting for expected traffic growth, implying that a solution for pollutant reductions had to come from another source. Among market-based measures, an open emissions trading concept, where for example each aircraft purchased by an airline would require that airline to adopt and modernize polluting components in a more pollutant-emitting industry, would be environmentally more effective than emissions charges. Mr. Shuter insisted that ICAO-recommended emissions charges should be limited, and only perhaps with bilateral agreements, and should not be considered as part of the general toolbox of solutions available to regulators.

Transport Canada emphasized finding solutions with performance-based regulations developed in consultation with stakeholders, not prescriptive regulations.

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### **Researchers and advisors**

**Dr. Michael Tretheway, Executive Vice President and Chief Economist, InterVISTAS Consulting,** explained that the future business class traveler, the most profitable segment of the passenger market, today, at a younger age, looked different. The age of 55 became important in population age statistics for air transport, since at that age many stopped flying for work as they headed into retirement. However, on closer examination, the purchase of air travel tickets continued into more advanced ages through package travel.

The tourism market was going through dramatic changes, with a quickly growing segment of the market being tourism from developing countries. With developing countries gaining wealth while populations in Europe were declining (by 2025, 125 million people would be over 65, which was 25% more than today, and globally 1.2 billion would be over 60, double the amount today), the source of the tourist traveler would shift. By 2020, the World Tourism Organization estimated that there would be 100 million outbound travelers from China, with 95 million Chinese already having incomes of between €15,000 and €18,000 in 2000. India currently had 250 million people in the middle class, and with per capita income growing at 5% per annum, was expected to have 50 million outbound tourists in 20 years. Latin America, led by Mexico, Chile, and Venezuela, would also grow their outbound tourism market. The growth would bring about new challenges, amongst them the process for handling international visas (especially for countries such as China), cultural issues (such as marketing, type of food availability, and languages), and the overall stress experienced at airports by those traveling, which would impact repeat travel and the overall reputations of facilities.

LCCs had created different options for travel. The general fare structure in the United States collapsed in late 2000, not due to the events of 9/11, but in part due to LCCs having achieved a critical mass in the market, with a presence of almost 30% of the traffic today, versus 10% in the 1980's and 1990s. Today, 90% of destinations had some form of low cost carrier service. By 2000, the LCC model had matured, and in 2003, all of the major low cost carriers in the US had been profitable. In contrast, full service carriers (FSCs) had cent-per-seat mile costs that led them to be unprofitable. In the last two years FSCs had worked hard at reducing their costs by restructuring their labor and supplier costs, flying at a higher seat load factor with reduced capacity, and taking advantage of smaller hubs ("rolling hubs"). The changes in the FSC operations and the introductions of LCCs had lowered overall route traffic density per FSC, which will eventually raise the per-unit cost for carriers again, a condition that might make FSCs seek large alliances, consolidating the industry in search for economies of scale. However, the LCCs in the meantime had also reduced their operating costs, further cementing the fundamental changes in the industry fare structure.

Looking ahead to 2005-2010, LCCs could grow to a 40-55% share of the continental market. LCCs collectively had about 1,800 new aircraft on order, all in order to meet incremental demand. Much of the aircraft orders for FSCs were for replacement aircraft. InterVISTAS Consulting believed that within the next five years LCCs would experiment with intercontinental services, initially with aircraft such as the Airbus A320 and maybe a newer version of the Boeing 737, involving stops in segments that were traditionally flown non-stop.

Facing these industry pressures, FSCs needed to consolidate, which required removing limits on foreign ownership laws. IATA had called for an all-out repeal of foreign ownership limits, and ICAO had recommended replacing ownership limits in bilateral air service agreements.

Looking further into the years 2010-2015, LCCs would most likely move into somewhat higher capacity aircraft, such as the upcoming Boeing 787, with around 225 seats, giving them intercontinental access. There had been a steady progression over the years into incrementally higher capacity aircraft amongst

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the LCCs. At the same time, there would probably be the emergence of global mega-carriers, with airline consolidation already expected between the years 2005 and 2010. Emirates Airlines had 45 Airbus A380s on order, and Dubai International Airport was to have 23 Airbus A380 gates. Emirates, already a major 5<sup>th</sup> freedom operator in the Tasman Sea and Indian Ocean, would be able to reach almost the entire world non-stop from Dubai. These developments further underscored huge expected growth in air transport. Historically, between 1970 and 2002 the world economy had grown by about 200%, whereas air transport passengers had grown by more than 500% in the same period, and world air cargo has grown by over 1,000%.

### ***Panel discussion highlights***

#### ***On LCC penetration in bilateral markets:***

Though it has been said that LCCs, because of bureaucratic obstacles, would not operate as freely in regimes controlled by air services agreements, LCCs would and do already go into bilateral markets. Examples were West Jet between Canada and the U.S., Virgin Blue/Pacific Blue outside Australia/New Zealand flying to island nations, and border crossings in Southeast Asia. The industry was also moving to much more liberalized arrangements. The future growth of LCCs was going to be limited in domestic markets, and new capacity obligations (airplanes on order for delivery while the legacies regroup in domestic markets) would force LCCs to find new markets outside national borders.

#### ***On the comparative advantage of state versus private operations of airports:***

There was a whole range of arrangements between pure state ownership and completely privately held operations. Though the system was definitely commercializing, there were many differing models. The economic realities were such that governments had less and less money, and what they had would be spent on items such as education, health care, i.e. items where there was no real source of revenues except taxes. Governments had been discussing privatization of harbors and highways, where there were a lot of revenues.

As airports commercialized, the relationships between airports and airlines should improve and not deteriorate. However, airlines had begun privatizing much earlier than airports, and the dialogue between the two had been difficult. As airports moved closer to commercial models, this would change. Airports were now also very conscious of the concept of hubbing. ACI encouraged improvement in cost efficiency, and partnerships with the airlines.

#### ***On the efficiency of potential partnerships with airlines and other modes of transport, such as rail:***

Local rail connections were important in terms of local level feeding of airports. The example of London Heathrow Airport was provided where there had been a very good experience with the rail link to Paddington Station, with 40% of passengers arriving by rail. High-speed rail links, however, had many hidden subsidies, with a heavily subsidized infrastructure. In addition, the actual footprint of a new high-speed rail link was considerable, with a lot of land taken up, and a lot of noise being generated. High-speed rail could be more effective in city center to city center connections, where aircraft have no ability to land.

#### ***On Canada's experience with SMSs now shifting the safety function from the regulator to the operator:***

The Government still had a serious role in ensuring safety by monitoring the safety management system used by operators. Canada was still early in the process – one airline had the system up and running, and regulations were in place to make everybody compliant. In the past, Canadian inspectors would look at

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the technical details, now they were going to look at the SMS. From a demographic point of view there were now requirements for people with a very different set of skills understanding how a SMS should work. This might lead to the point where inspections were no longer conducted at the airport *per se*, but instead airlines would provide reports to the CAA, along with their plans and how they were implementing them, including how they were doing their own inspections, and complying with regulations. The key was to demonstrate to the CAA that they were compliant with the CAA's regulations.

### ***On common branding, code-sharing, their regulation, and consumer transparency:***

Code-sharing was fairly common in other transport sectors, e.g. container and bulk shipping in the maritime environment, where capacity could be operated by one line, but sold by another line. Regulatory intervention would be restrictive, though seeking transparency for the customer would be appropriate.

### ***On the nature of noise levels and noise pollution at airports:***

Noise was going to decrease on a per aircraft basis. As new aircraft came into service, they were quieter than their predecessors. However, an aircraft's life was about 25 years, so improvements were dependent on the rate of the fleet being renewed. When examining noise the viewpoint was not of an individual aircraft, but rather forecast for an airport, which was the number of flight times the noise of the individual aircraft. This was a logarithmic function, so if traffic doubled, noise would go up by three decibels. A more serious problem was noise in the evening, with a multiplication factor of over 12, far more of an annoyance. As traffic increased, a lot of it would be extended into the shoulder hours i.e. noise was going to go up, and noise at night would go up with increased nighttime operations.

## Session 5: Development Cooperation in Civil Aviation and Mobilization of Resources

### *ICAO's Technical Cooperation Program*

**Mr. Geoffrey Moshabesha, Chief, Field Operations Section – Africa, Technical Cooperation Bureau (TCB) of ICAO**, gave an overview of the Technical Cooperation Program, and provided a highlight of the International Financial Facility for Aviation Safety (IFFAS).

The TCB had long and extensive experience in providing assistance to states in the development and implementation of projects across a wide spectrum of the air transport sector. ICAO's technical cooperation encompassed project identification, development, support in the mobilization of resources, and implementation. While the primary beneficiaries of this program to improve civil aviation were developing countries, international civil aviation had benefited indirectly from the resultant enhanced standards, practices, and procedures. In almost half a century of technical cooperation project implementation, the TCB, in partnership with ICAO's Contracting States, had played an invaluable and instrumental role in the achievement of a safer, more efficient, and reliable air transport network worldwide.

In 2004, the TCB executed over 120 diverse technical cooperation projects in developing countries, ranging from massive endeavours to relatively small-scale ones. The total cost amounted to about US\$ 160 million.

Mr. Moshabesha elaborated on priority activities of the main objectives of ICAO's technical assistance to governmental and other entities, starting with strengthening of civil aviation institutions, infrastructure and services, technology transfer, and the related human resources development. The Technical Cooperation Program was also one of ICAO's main instruments to assist States in taking remedial action to achieve compliance with ICAO Standards and Recommended Practices (SARPs), and remedy deficiencies identified through ICAO universal safety and security audits.

Over the past decade, the aviation sector had seen a drastic reduction in funds from traditional funding sources such as the UNDP, as well as crucial regulatory and economic changes. Responding to this new environment, ICAO introduced a new policy on technical cooperation and granted TCB the following mandate:

- to develop civil aviation as an integral part of the social and economic development of Contracting States;
- to improve civil aviation facilities in developing countries, emphasizing their compliance with ICAO SARPs, including those involving Communication, Navigation, Surveillance/Air Traffic Management;
- to promote the development of national civil aviation master plans on a priority basis; and
- to establish flexible funding policy mechanisms.

In relation to the TRAINAIR Program, Mr. Moshabesha explained that it was established with the goal of improving the safety and efficiency of air transport through the establishment and maintenance of high standards of training for aviation personnel on a global basis. He added that civil aviation training institutions faced considerable challenges. They had to respond to an increasing demand for well-qualified personnel in a wide range of disciplines, dealing with emerging technologies. At the same

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time, their resource constraints did not allow them to satisfy this demand. A basic premise of the TRAINAIR Program was, therefore, to enhance the cost-efficiency of training for the participating states in light of today's economic realities.

The TRAINAIR Program was an international cooperative system for civil aviation training institutions. Members of the program developed training packages to an international methodological standard established by TRAINAIR. As the materials were prepared, using the same process and standards, they could be easily used by all members of the program. An integral part of the program was an international training resource sharing system administered by ICAO. The sharing system was highly efficient for members as they acquired many of the courses they needed through the system and needed only prepare a limited number of courses themselves. Thus, TRAINAIR enabled members to both enhance the quality and cost-efficiency of course development, while at the same time standardizing the instructional approach used by members world-wide. For more information, visit the TRAINAIR web site at <http://www.icao.int/anb/trainair/Home/Index.html>.

Furthermore, Mr. Moshabesha highlighted the functions of the TCB Field Procurement Section, namely the provision of equipment, supplies, and sub-contract services to civil aviation organizations, in accordance with approved specifications and purchasing procedures. In this process, close liaison was maintained with the clients, ICAO field staff, and personnel of the Field Operations Sections on matters of specifications and costs. The Section was also responsible for the operation of the Civil Aviation Purchasing Service (CAPS).

Acquisition of equipment through ICAO bore several advantages for the project partners:

- full management of procurement cycle from specification of equipment, tendering, bid evaluation, contract and price negotiation with suppliers, monitoring of delivery, installation through commissioning
- compliance with ICAO SARPs assured
- possibility to purchase under tax free conditions
- insight on technological advances
- optimum warranty conditions
- clear and short delivery times
- full transparency – fairness of evaluation
- payment assurance – funds in trust (ICAO)
- open worldwide market.

Since the TCB had long advocated sub-regional cooperation to enhance the safety, security, and efficiency of air transport operations, Mr. Moshabesha elaborated on the development and objectives of the Cooperative Development of Operational Safety and Continuing Airworthiness Programs (COSCAPs) that had been established around the world, with more planned to be implemented. COSCAP was a cooperative agreement among participating states executed by ICAO by means of a trust fund. The respective COSCAP programs aimed to remedy deficiencies in the national flight safety oversight capabilities by improving the unified and effective implementation of SARPs, and by establishing a regional core of highly qualified flight operations and airworthiness inspectors to perform flight safety inspection and certification functions on behalf of the participant states. Regional aviation safety teams were established to support this technical work.

This approach offered, *inter alia*, the following advantages:

- cost effectiveness and optimization of human resources;

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- enabled states to implement, without delay, their action plans to address the deficiencies pointed out in the reports on safety oversight audits conducted by ICAO;
- harmonization of safety-related regulations, policies, and procedures in the sub-region, and development of inspection manuals;
- establishment of a regional core of highly qualified flight operations and airworthiness inspectors able to provide primary or supplemental assistance to participant states in the performance of safety inspection and certification activities;
- training and professional development of national aviation safety inspectors; and
- participation of the donor community and aircraft/airline industry interested in promoting flight safety and harmonization of flight safety regulations through project funding.

Each COSCAP program implemented by the TCB in a particular sub-region was guided by a Program Steering Committee, comprising the DGCA's of participating states, the Director of the Technical Cooperation Bureau of ICAO, the ICAO Regional Director, and the Project's Chief Technical Advisor/Project Coordinator. The representatives of the donor community and other organizations participating in program funding were invited to participate in all steering committee meetings that were held on a regular basis to review the progress of the COSCAP program, and to assign priorities for future work.

Similar to COSCAP, the TCB had recently instituted its first Cooperative Aviation Security Program in Asia/Pacific (CASP-AP). This program emanated from the Resolution of the 33<sup>rd</sup> Session of the ICAO Assembly and the Conclusions of the High-level, Ministerial Conference on Aviation Security, which was held in Montreal in February 2002. This major global event emphasized, *inter alia*, the need for a global and comprehensive aviation security plan of action and, through ICAO technical cooperation projects, the adoption of regional and sub-regional approaches.

The objective of CASP was to ensure compliance with international conventions and ICAO SARPs and guidance materials related to aviation security, by enhancing the capabilities of the participating states/administrations. CASP also aimed at creating a regional structure for cooperation and coordination in relation to aviation security, and for the training of aviation security personnel.

Furthermore, CASP, through the use of consultants and in-kind contributions from donors, provided assistance to States in activities such as reviewing aviation security laws and regulations, providing guidance and assistance in the development/implementation of an adequate security authority, providing assistance to states in establishing a process for coordination and cooperation amongst the various authorities responsible for aviation security, and reviewing and revising National Civil Aviation Security Plans, National Civil Aviation Security Quality Control Programs, National Civil Aviation Security Training Programs, and National Contingency Plans. Training was to be provided in the form of regional training courses, as well as on-the-job training. Additionally, technical assistance was to be provided to States in preparation of upcoming audits, as well as assistance to overcome deficiencies already observed through evaluation missions and/or audits.

CASP, like COSCAP, was implemented by the TCB in a particular region, guided by a Program Steering Committee, comprising the DGCA's and heads of aviation security related organizations of participating states, Director of the Technical Cooperation Bureau of ICAO, ICAO Regional Director, and the Project's Chief Technical Advisor/Project Coordinator. The representatives of the donor community and other organizations participating in program funding in cash and/or in kind will be invited to participate at all steering committee meetings that are held on a regular basis to review the progress of the program and to assign priorities for future work.

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The establishment of other regional CASPs was foreseen worldwide. Implementation of a CASP offered similar advantages to participating States as listed for COSCAP above.

A concluding item in the presentation was the International Financial Facility for Aviation Safety (IFFAS). In this regard, Mr. Moshabesha indicated that ICAO established IFFAS in December 2002 to provide funding support to projects that could improve aviation safety through the implementation of measures, which were primarily identified as a result of the ICAO USOAP. The key objective of IFFAS was, therefore, to finance safety related projects in cases where states could not otherwise provide or obtain financial resources, and under conditions more flexible and less onerous than those usually available in financial markets.

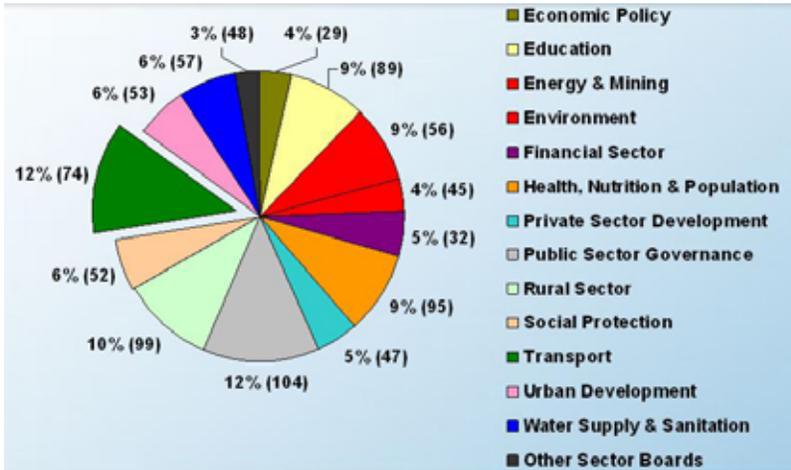
The main constituent parts of IFFAS were its Governing Body, established by the ICAO Council, and a lean Secretariat. Members of the Governing Body came from States or international organizations participating in IFFAS. All ICAO Contracting States were eligible to contribute to or seek financial assistance from this funding mechanism, primarily through loans or grants.

IFFAS was exclusively financed by voluntary contributions. To date, the total funds received amounted to approximately US\$ 2.4 million, with an additional US\$ 700,000 in pledges. Owing to the limited resources, funding priorities were given to safety-related projects presented by least developed countries on a regional or sub-regional basis.

So far, IFFAS had provided assistance to five COSCAPs in Asia and Africa.

### ***The World Bank's mission and functions***

**Mr. Schlumberger, Principal Air Transport Specialist, World Bank**, spoke about the World Bank's mission and functions overall, the World Bank's Transport Sector's objectives, the role of air transport at the World Bank, and funding mechanisms for development.



**Figure 28:** World Bank percentage commitments and projects by sector, 2003-2005. The total commitment for the period equals US\$ 57.2 billion, with 880 projects.

The World Bank was created as part of the Bretton Woods agreements of 1944 for the reconstruction of Europe after World War II (the first country to receive loans was France, and the last European country, in 1980, was Portugal). There were now four major organizations in the World Bank family – the original International Bank for Reconstruction and Development (IBRD), formed in 1944, the International Development Agency (IDA), formed in 1960 that focused on very low cost loans (usually at 3/4% interest and maturities of 40 years) for the poorest countries, the International Finance Corporation (IFC), formed in

1956 with a focus towards private sector financing and financing at rates prevalent in the developed

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world but emphasizing areas that were not served as such, and the Multilateral Investment Guarantee Agency (MIGA), formed in 1988 for providing loan insurance. The Bank's main mission was to fight poverty, and even more importantly, to help people help themselves and their environment. In addition, the Bank's mission was also to be an institution representing the highest standards of international expertise, and to be the neutral reference in many domains as to specific knowledge and best practices.

With only US\$ 11 billion from the 184 IBRD shareholders, the Bank had made almost US\$ 400 billion in loans and worked in more than 100 countries, and was the largest development institution in the world. The main functions included loaning funds (the IBRD and the IDA lends to governments, whereas the IFC and MIGA serviced the private sector), providing technical assistance and advice, and serving as a catalyst in stimulation investment in developing and transitioning countries. As such, the Bank's role was not just in lending, but even more in policy advice and capacity building. The Bank was divided into areas of technical expertise (of which transport is one of the largest in terms of lending), and into six regions, namely Africa, East Asia and Pacific, South Asia, Latin America and Caribbean, Middle East and North Africa, and Europe and Central Asia.

### **The role of transport and air transport within the bank**

The overall objectives of the Transport Sector were to

1. reduce poverty and increase economic growth by improving access to markets, employment, and services,
2. assist the World Bank's clients to adjust to new roles for the public and private sectors,
3. assist clients in adopting innovative financial management techniques (e.g. Public-Private Partnerships), and
4. facilitate trade through the removal and/or streamlining of regulations and the promotion of regional integration (e.g. Yamoussoukro Decision of 52 African states calling for airspace liberalization to 5<sup>th</sup> degree freedoms).

In terms of air transport, the overall goal was to develop safe, secure, reliable, cost-effective, and environmentally responsible air transport services to improve accessibility and affordability for all sections of the population, in support of social and economic growth.

The focus of the air transport office was on

1. policy advice and knowledge transfer, including regulatory reforms (aviation code and regulations, where experience shows that the more you liberalize, the more you need to regulate), capacity building within CAAs, airline restructuring and privatizations, and commercialization of airport operations;
2. partnerships with ICAO, the FAA, the EU, and the private sector (e.g. IATA) on projects (including funding and technical assistance), and on policy implementation;
3. financing of infrastructure such as airports, runways, CNS equipment, GNSS, and security equipment (fencing, x-ray machines, etc); and
4. private sector funding, such as aircraft acquisitions (IFC) and foreign investment guarantees (MIGA).

The air transport office's priorities for development were infrastructure, CAA oversight and capacity building, and economic regulation. Having an adequate infrastructure was a necessary condition for the development of air transport, and CAA oversight and capacity building were also important for development. It must be noted that air transport safety could not be seen as a public health issue (road transport has fatality rates that were spread highly among a population, whereas air transport fatalities, though highly visible, are relative few in number), but lapses in safety and in the required underlying

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infrastructure resulted in high economic costs as reflected in financing, insurance, and even the denial of the ability to code share with other airlines. By the same token, lapses in security could not be seen as a law enforcement issue – non-compliance with security standards will hinder access to international markets. Economic regulation liberalization was particularly important for route dispute settlement and competition rules in Europe and the U.S.

### Development perspectives and solutions

Since many World Bank client countries were either too small or too poor to afford such things as a full-featured national CAA, the Air Transport Office saw the overall solution in *regional projects*, such as regional economic regulation resulting in harmonization, regional competition rules, regional dispute settlements, and regional regulatory agencies. Similarly, for safety and security oversight, capacity building could be accomplished on national and regional levels, leading to regional safety agencies.

Initial funding for regional agencies came from funds of existing organizations with income (e.g. COCESNA), grants from international development organizations (e.g. IDB, World Bank), and from bodies in countries providing bilateral support, such as the FAA of the U.S. and others within the EU. However, international institutions such as the World Bank could only provide lending for the process of getting started – the challenge for regional agencies was developing sustainable sources of long-term funding, such as air navigation fees.

For national agencies, the initial funding mechanism was similar. However, the challenge lay in establishing permanent allocations of public long-term funding.

Permanent funding overall for regional agencies ideally was from users (air carriers), and not from states. The agencies would perform exclusively regional tasks, and maintain well-paid personnel that would operate at higher capacity than at a national level. The agency would be self-sustainable and require no further financial support from the outside.

For a national CAA, permanent and secure funding would require the agency to have its own budget allocation and spending authority, a well defined mission and transparent expenditures, and, if public financing seems unreliable or inefficient, all national aviation income directly allocated to the agency.

In conclusion,

- the World Bank supported air transport projects in developing countries through grants and loans,
- air transport safety and security, two crucial factors, had to be addressed both on a regional and a national level, and
- funding for the establishment of regional agencies as well as support for national CAAs was available from international organizations and bilateral partners.

The main objective remained long-term self-sustainable funding by public and operational income.

### **Private financial institutions**

**Mr. Fabian Bachrach, Managing Director, Air Finance Corporation** elaborated on his hands-on experience as managing director of the Air Finance Corporation, a boutique financial organization with some 15 years experience specializing in leasing transport category jet aircraft to airlines in mainly developing countries. The company specialized in three to five year leases of mostly Boeing 737

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airliners. The Air Finance Corporation had witnessed a high increase in demand, especially in Africa, and in the process of meeting this demand had come across the development efforts of the World Bank.

As a firm specializing in providing financial capital to airlines in the developing world, the Air Finance Corporation looked particularly at a potential client's creditworthiness, and the stability of the client's country. Particularly favorable political conditions could now be found in areas of Africa.

One of the biggest obstacles to having profitable airlines was the competition created by subsidized airlines. In the term "subsidization" Mr. Bachrach also included the continued operation of airlines under bankruptcy protection, such as many US airlines, Air Canada, and South African Airlines. Mr. Bachrach stated that government subsidies to airlines, such as practiced for example in the US and Europe, hurt the healthy airlines that were typically Air Finance Corporation's customers. As a further example of bailouts hurting the growth of a healthy airline industry, Mr. Bachrach pointed to the experience in Mexico, where the two main carriers had been initially privatized, and, after failure, again ended up being government subsidized, and were now harming the development of truly private airlines.

In terms of successful promotion of development of air transport in the developing world, Mr. Bachrach mentioned another experience in Mexico, where the creation of a tourism agency (FONATUR) resulted in large investments in land in Cancun and Yatucon. After infrastructure development, plots were sold to private hotel developers. Cancun now had 25,000 hotel rooms, and 210 commercial jet flights per day.

Mr. Bachrach mentioned that Mozambique, for example, does not currently have the same hotel capacity, and could benefit from a PPP, which would raise the demand for air transport.

### ***Regional initiative – New Partnership for Africa's Development (NEPAD)***

**Mr. Tschepo T. Peege, President, African Civil Aviation Commission** drew a link between the development of policy and its implementation in Africa in the context of the relationship between Yamoussoukro Decision of 1999, which entered into force on 12 August 2000, and the New Partnership for Africa's Development (NEPAD). African aviation had reached a stage where African nations, through solidarity and cooperation within the framework of the African Union, were following a holistic approach to the implementation of the decision. This was accomplished through effective tools such as the NEPAD mechanism, which helped in bringing about liberalization of air services in Africa, and untrammled competition between African carriers themselves and carriers of other continents.

The air transport industry in Africa was mostly driven by trade generated by natural resources available in the African continent. Therefore, the process of liberalization achieved through the Yamoussoukro process would help move goods and services more efficiently around the world. There was mention of a key event which occurred in May 2005, where the African Ministers responsible for air transport had gathered at a summit in Sun City, South Africa. The outcome of the meeting was the adoption of a resolution in the form of an action plan to follow up on the implementation of the Yamoussoukro Decision. Mr. Peege also noted a meeting of African Ministers of Tourism in Gabarone, Botswana, held earlier in 2005, which had come up with a seminal resolution on the opening up of African skies to improve intra-Africa air travel, which, *inter alia*, urged African Ministers of Civil Aviation to "make every effort to assure full implementation of the Yamoussoukro Decision in practical terms at the earliest possible date".

The most crucial step toward progress lay in the Yamoussoukro Decision, which established an arrangement among state parties for the gradual liberalization of scheduled and non-scheduled services operated on an intra-African basis. The marriage between the Yamoussoukro Decision, its policies, and

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NEPAD were a workable equation, particularly at a time when African aviation was clearly at the crossroads of progress. Mr Peege stated that the key word towards success might well be “consistency”. Consistency with each others’ regulations, and uniformity in terms of competitive approach, coupled with the use of geographic, human and other resources aimed at achieving a harmonious balance between regulatory control and economic strategy, could well be the formula for future African aviation.

### ***Questions and discussion highlights***

#### ***On the effects of the Yamoussoukro Decision on African air transport markets:***

Connectivity had gone up within Africa since the signing of the decision in 2000. For example, you could now fly directly from Johannesburg to Dakar, from Johannesburg to Cairo, from Nairobi to Cote d’Ivoire. Code-sharing had appeared, as between South African and Ethiopian Airlines. Within the South African market, LCCs had emerged.

#### ***On the importance of the entire industry using the same numbers:***

It was important that the entire industry used the same numbers and figures, especially in the context of employment generated by the air transport industry. The industry needed to provide politicians with reliable information about the industry’s economic contribution. Reference was made to tourism satellite accounting that was designed to achieve just this, and took account of the input/output of national accounting systems. The WTO-OMT was hoping to tie the satellite accounting concept into the national accounting of countries’ economies, and was hopeful that a system would be in place within five years.

#### ***On the relationship of regional oversight organizations to sovereign states’ CAAs:***

Sovereignty was not given up entirely, and domestic CAAs still had their authority. However, highly specialized functions and technical expertise, usually at high cost, such as inspections, were easier to retain if regionally funded and administered.

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### Summary of Developments in Air Transport – Working Groups

Four working groups of experts provided questions and answers among pressing topics on the economic contribution of civil aviation. The groups were divided into four major topics:

1. Air carriers
2. Infrastructure providers
3. Development cooperation and resource mobilization
4. Safety and security

Each group developed a set of priorities and solutions to what it deemed to be most pertinent today. Summarized below are the thematic issues that were identified and how they were addressed.

#### ***Working Group 1 – Air carriers***

**Facilitator: Dr. Andrew Sentance, Chief Economist and Head of Environmental Affairs, British Airways**

#### **Key questions posed to working group**

##### **1. Market liberalisation and competition**

1. Why is this important?
  - Generates value for customers and stimulates the market
  - Regulatory changes are moving in this direction
2. Challenges
  - Thin routes/remote locations may be poorly served
  - Tourism and development may suffer if air services are inadequate
3. Solutions
  - New ways of supporting thin routes – not airline subsidies
  - Bid/auction system open to competitive tender

##### **2. Globalisation**

1. Why is this important?
  - Global business is creating a global airline market
  - Some large consolidated airlines will emerge, coexisting with niche and regional carriers

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### 2. Challenges

- Investment rules and bilateral system will inhibit development of global airlines

### 3. Solutions

- New multilateral system of regulation
- Exact structure and institutions
- Support for evolutionary approach

## **4. Financially-sustainable industry**

### 1. Why is this important?

- To support growth, investment, and economic development

### 2. Challenges

- Labour and supplier costs
- Government intervention
- Complexity and fragmentation
- Excess capacity and volatile demand

### 3. Solutions

- Management free of political interference
- Reform of national bankruptcy, ownership, and control laws
- More competition or better regulation in value chain

## **5. Environmentally-sustainable growth**

### 1. Why is this important?

- To allow expansion of infrastructure to support growth and sustainable development

### 2. Challenges

- Growth exceeds performance improvements
- Noise/emissions trade-offs

### 3. Solutions

- Open trading mechanisms for greenhouse gases
- ICAO's Balanced Approach for noise and local emissions

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## **Working Group 2 – Infrastructure**

**Facilitator: Vijay Poonoosamy, Executive Chairman, Airports of Mauritius**

### **Key questions posed to working group, with their answers**

#### **1. Development constraints of air transport infrastructure in emerging and developing countries**

1. What are the most critical resource constraints in air transport?
  - Effective business plan
  - Technical expertise
  - Financial resources
2. Why is resource mobilization such a challenge, and how can economic impact assessments for airports support fund raising for infrastructure development?
  - Competition for funding of essential needs at the national level
  - Insufficient revenue-generation
  - A positive economic impact study will assure the financial institutions of the viability of a project.
3. Can developing a sustainable stakeholders' approach achieve win-win solutions to meet the development constraints of airlines, airports, and air navigation services providers?
  - Formal consultations with all stakeholders
  - Consultation with airlines and other users concerning agreed service levels, transparency and cost-effectiveness

#### **2. Economic policy and privatization/commercialization**

1. What are the impediments to reforming economic regulations that affect airport operators and/or air navigation services providers?
  - Economic regulation is essential in a commercialized environment to ensure safety, efficiency, cost-effectiveness, and transparency.
2. How do governments exercise their responsibilities in a commercialized environment where airports and air navigation services changed their ownership and control structures as well as management approaches?

From a socio-economic dimension as well as a business/commercial dimension through

- development of a national infrastructure plan;

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- different forms of regulation;
- a charter or agreement as the basis for granting permit to an entity's operations to ensure that operations are run in a safe and cost-effective manner consistent with ICAO's Policies on Charges for Airports and Air Navigation Services (Doc 9082/7, available on ICAO's website free of charge). [Additional guidance material is contained in the Airport Economics Manual (Doc 9562/2) and the Manual on Air Navigation Services Economics (Doc 9161/4).]

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### ***Working Group 3 – Development cooperation and resource mobilization***

**Facilitator: Charles E. Schlumberger, Principal Air Transport Specialist, World Bank**

#### **Key questions posed to working group, with their answers**

##### **1. Constraints**

1. What are the most critical resource constraints in air transport?

- Financial resource constraints prevail for air transport infrastructure (airports and air navigation services providers) if airport authorities and air navigation services providers under public ownership and control cannot retain their revenues for modernization and expansion.
- In such a situation, low priority of aviation in overall governmental finances drains air transport services and facilities of resources for re-investment, and makes it difficult to compete in a fast changing business environment.
- If commercialization of publicly owned air transport operators is considered as diminishing sovereignty (fiscal and prestige), interference of regulators causes lack of flexibility and blocks the adoption or adaptation of business strategies as revenue-generating entities (or even privatization as “firms”).
- Struggling airlines in developing countries face difficulties in financing the modernization and capacity of their fleets given the actual or perceived risk of asset recovery. For instance, foreign-registered aircraft have a higher collateral value.

##### **2. Development of air transport services and infrastructure in emerging and developing countries**

Why is resource mobilization such a challenge, and how can economic impact assessments support fundraising for civil aviation development?

- A mechanism to reduce resource constraints of governmental/public agencies providing air transport facilities or delivering support services would be pooling of resources for certain functions on an inter-agency, bilateral, sub-regional or regional level, and adjusting the legal national frameworks, if required.
- Build incentives for retention of qualified personnel to sustain efforts in human resource development and management.
- Instead of the traditional loans to governments, financial schemes and business models for lacking or insufficient air transport infrastructure need to target airport concessions, management contracts, and private/public partnerships. The market shares of foreign carriers and the established intercontinental and intra-regional route networks led to market segmentation and contribute to small traffic volumes

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and low economies of scale for small national carriers. However, national carriers may pursue opportunities for strategic alliances and foreign ownership.

- For governmental/public agencies operating AT facilities and services, apart from established aviation revenues through the collection of air navigation services charges on a cost-recovery basis to the extent possible and appropriate, generation of non-aviation revenues can be explored for airport-based commercial activities.
- ICAO's framework of global communication, navigation, surveillance/air traffic management (CNS/ATM) systems implementation forms the basis for new technologies for over-flight services. Assistance is needed for the harmonization of existing ground-based and complementary/substituting satellite-based systems, for instance, for those airlines that have aged fleets with aircraft not equipped with the respective avionics. To reduce life-cycle costs of ATM technology, the approach of low-cost and low-maintenance with long-term service contracts is favoured.
- Although the airline industry structure is not optimal for development (since the market economy rules), mobilizing the political will and authority to recruit "change agents" is critical for carriers, airports, and ANS providers to operate safely and securely as well as to survive in open competition.

### **3. Role of development cooperation agencies, governments, and aviation industries**

What is lacking to achieve more effective implementation of aviation programs and projects, and how can development cooperation agencies, their recipients and aviation industries, including their associations, improve their collaboration among bilateral and multilateral donors themselves, and between donors, governmental agencies and aviation industries?

- Development cooperation agencies, their recipients and aviation industries, including their associations, can extend and intensify their collaboration in assisting air transport industries directly or through the governmental authorities based on tailored needs assessments.
- Support in national civil aviation master plans and their adoption, regional safety oversight programs, regional or sub-regional harmonization of regulatory frameworks and collaboration in the provision of air navigation services are among those activities and models that achieved good results as foundation for future sector development.
- Travel, tourism, and trade are interdependent economic catalysts as negatively affected by infrastructure gaps and rigid regulatory and legal frameworks as they benefit from each others' industry development.
- Entities that assess the economic impact of civil aviation or tourism are called to harmonize their methodologies and results and promote their application in support of policy making, planning, and fund raising for their respective industries. ICAO intends to develop training modules and provide technical support to assist States upon request with the implementation of civil aviation

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impact assessments on a cost-recovery basis. Further cooperation among ICAO, ATAG, WTO-OMT and the World Bank, as well as other relevant institutions, should be mutually pursued in the field of research and implementation of impact assessments in the fields of aviation and tourism.

### **Additional points:**

What are the benefits of an international charging policy in a commercialized environment?

- uniform application of charging principles;
- transparency for users; and
- predictability.

Does commercialization of national services providers facilitate or hinder the harmonization of the global air navigation system?

- facilitates with governments focusing on the regulatory role; and
- regional cooperation to be encouraged.

### **Infrastructure development and constraints on growth**

What role should air carriers play in ensuring efficient development of airport and airspace infrastructure?

Are industry forecasts of growth realistic in light of the environmental constraints on the industry? How should we strike the right balance between securing the economic benefits of aviation and addressing environmental impacts?

Should the World Bank and other international bodies be supporting the development of aviation infrastructure in emerging/developing countries, to support the growth of airline networks?

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## **Working Group 4 – Safety and security**

**Facilitator: Dr. Vahid Motevalli, Associate Professor and Director, Aviation Institute, George Washington University**

### **1. KEY QUESTIONS**

- 1.1 What are the potential exclusions from air transport activities due to deficiencies in aviation safety and security?
- 1.2 What are the sources of revenue that can be used to enhance safety and security oversight?
- 1.3 What partnerships between government and industry (regulator and regulated) are possible?
- 1.4 Are the following items related to the infrastructure of the civil aviation safety and security?
  - a) Civil aviation organization
  - b) Training facilities and programs
  - c) Developing qualified technical personnel
  - d) Airport perimeter security
  - e) Airport terminal
  - f) ATC system

### **2. CONCLUSIONS**

#### **2.1 General Approach**

- 2.1.1 The Working Group adopted the general approach that an air transport system that is neither safe nor secure cannot prosper. The overriding theme of the work undertaken by the group was therefore based on two key issues relating to the development of air transport and the ultimate goal of operational sustainability. This goal has to be attained in an environment of challenges brought to bear by safety and security and the solutions that were available to face those challenges. The Group was of the view that the key questions appearing above should be addressed as a whole rather than separately, with a view to providing answers to them within a structure of challenges and solutions.
- 2.1.2 It was generally recognized that challenges in safety and security as they impacted on an efficient air transport system were particularly significant to developing nations and that, although there were already in existence partnerships between the regulators and industry, in many instances the basic challenge lay in the management of such relationships.
- 2.1.3 The Working Group noted that it had been requested to address safety and security, which were two separate areas of discipline and activity within the ICAO audit spectrum. It was considered the view of the Group that the most pragmatic manner in which the two subjects could be addressed was to identify common grounds and commonalities in the two areas that would impact on the economic contribution of civil aviation.

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### **2.2 Common Ground**

2.2.1 The most critical factor identified was political commitment required on the part of States and the authorities to take measures in ensuring that the essential requirements for safety and security in aviation are complied with. Under this broad rubric, the following common grounds were identified:

- Legal requirements (including compliance with international treaties and agreements);
- Compliance with regulations;
- Risk management;
- Training and human resource development;
- Funding;
- Practical measures in implementation; and
- Public perception;

2.2.2 It was agreed that the aforementioned grounds formed integral components of a value chain which culminated in the final product of administrative stability and operational sustainability of civil aviation.

2.2.3 Furthermore, it was observed that both safety and security were handled through common processes based on an empirical approach using accident or incident investigations and threat assessments respectively. However, it was noted that the aviation industry had a better system for reporting safety incidents as opposed to security incidents.

### **2.3 Challenges and Solutions**

2.3.1 The main concern was the issue relating to the economic viability of civil aviation and the attraction of investment through the private and public sectors. This issue involved measures that would be conducive to mobilization of resources and generation of funds. One of the obstacles to fundraising was the escalation of security costs in a gradually slowing economy. This difficulty was compounded by the fact that there were no credible figures identifying the person or persons who bore the burden of such costs. Additionally, the problem remained regarding the identification of sources of funding to bridge the increasing costs relating to safety and security. Therefore, it was concluded that the economic impact of safety and security would be dependant on the following factors:

- Compliance of international treaties and regulations;
- Training and human resource development;
- Privacy and information protection; and
- Risk analysis and management.

2.3.2 With regard to risk analysis and management, one of the key issues identified was third party war-risk insurance, which had presented an almost insurmountable burden to the international aviation community and the regulators immediately after the events of 11 September 2001. The Working Group noted that, although there are various national insurance schemes currently in effect, the danger lay in the prospect of an act of unlawful interference with civil

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aviation leading to an accident that would spark a repetition of the withdrawal of third party war-risk insurance by the underwriters.

2.3.3 The following challenges and solutions were identified:

Challenges	Solutions
Security costs post 11 September 2001	Enhancement of safety and security as priorities, and ensuring the availability of State guarantees as an immediate measure in the event of an act of unlawful interference.
Lack of local technical expertise to develop critical steps in safety and security, e.g., development of national aviation laws	Provision of experts through funding resources and the training of local staff
Lack of locally qualified technical staff	Development of regional safety and security organizations with a view to sharing available staff
Lack of adequate safety and security culture	Safety and security awareness to be developed through regional organizations and ICAO missions
Lack of information sharing	Promotion of information sharing between public and private enterprise
Evolving commercial environment, which brings about safety and security implications (e.g., flags of convenience, virtual airlines).	Tighter national control of commercial enterprises
Preserving consumer rights	Regional and global legislation and regulation establishing rights of the consumer, to be translated to national legislation
Inequality in the application of charges	Ensure level playing field in accordance with existing regulation
Coping with levels of corruption	Build political will and commitment to address

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	corruption
Privatisation	Recognition that while overall accountability for safety and security was placed on States, certain reliance has to be placed on the private sector in the provision of safety and security services.

### 2.4 Generating resources

- 2.4.1 The key to generating resources inevitably lay in the liberalization of air transport, which in turn would attract foreign investment in a local aviation industry. In this regard, States should review existing constraints on ownership and control of airlines, and burdensome control of air traffic management systems.
- 2.4.2 Any revenues generated should be reinvested in aviation. There should be transparency and accountability in revenue management.
- 2.4.3 Local investment in private enterprises offering exclusive technology enhancing aviation security, such as equipment with biometric identifiers and encryption and decryption capabilities for the establishment of a public key directory, would ensure credibility of a local aviation industry, and consequently, attract investment.

### 2.5 Final conclusion

- 2.5.1 The Working Group was encouraged that the Workshop had brought to bear a paradigm shift from the perception that air transport, in particular, was the privilege of a few to the fact that it is a critically important activity in the economic progress of society. Under the circumstances, the abovementioned challenges and solutions would be viewed within an environment of greater understanding in the context of investment and the mobilization of funds.