
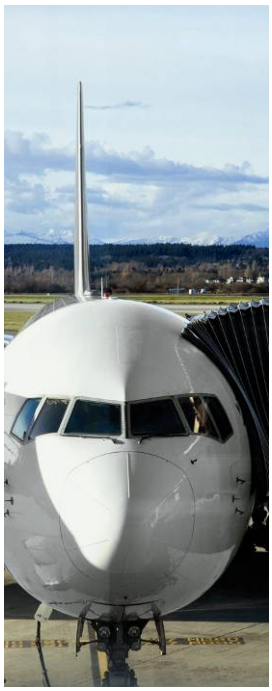


Annual Analyses of the EU Air Transport Market 2010

Executive Summary

September 2011
European Commission

Mott MacDonald

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Executive Summary

2010 Headlines at a Glance

	World	Europe	Units	Source
Passengers	2.5 billion (+8.7%)	**0.8 billion (+6.0%)**	Departing Passengers	ICAO (World) Eurostat (Europe)
Airline Demand (RPK)	+8.2%	**+5.1%**	Revenue Passenger Kilometres	IATA
Airline Capacity (ASK)	+4.2%	**+2.6%**	Available Seat Kilometres	IATA
Commercial Air Transport Movements	53.6 million (+2.1%)	**15.5 million (+0.6%)**	Airport Movements	ACI
Cargo (FTK)	+20.6%	**+10.8%**	Freight Tonne Kilometres	IATA
GDP	+5.1%	**+1.8%**	GDP growth (Europe = EU27)	IMF
Value of Air Transport Industry	$408 billion	**$118 billion**	Contribution to Global GDP (2008)	Oxford Economics
Airline Profitability	$16.0 billion	**$0.4 billion**	Net Profits	ICAO, IATA
Busiest Airport (Passengers)	Atlanta, U.S. (89.2 million)	**Heathrow, UK (65.7 million)**	Passengers	ACI
Commercial Aircraft Fleet	20,168	**6,645**	Widebody, Narrowbody & Regional Jets	Boeing, Airbus, JP Fleets
Safety	26 accidents 817 fatalities	**0 accidents 0 fatalities**	Commercial Airline Fatal Accidents & Fatalities	Flightglobal ACAS / Air Transport Intelligence
Delays	n/a	**14.8 minutes (+40%)**	Average departure delay per flight	EUROCONTROL CODA
Emissions	n/a	**+2.7%**	Airline CO_2 emissions covered by EU ETS	RDC Aviation

Foreword

Following a year of record pain, the air transport industry experienced something akin to relief in 2010.

At a global level, GDP growth of over 5% encouraged air passenger traffic demand to increase by over 6%.

At a local level, air transport markets bounced back in 2010 but with some degree of regional variation. Growth in Europe and North America lagged behind that in Asia Pacific, Latin America and the Middle East.

Impressive international traffic growth and robust domestic market development in developing countries, coupled with economic growth higher than in mature economies, created a two-speed pattern producing regional disparities in growth – continuing the general trend of the last decade.

Airports in general enjoyed a recovery in 2010, both in terms of traffic development and profitability. Particular attention must go to the rise of the major Asia Pacific airports, achieving significant growth.

Similarly, airlines recorded traffic increases in 2010, outstripping capacity growth. Although European carriers were hit by the impact of the Icelandic volcanic ash cloud in April, as a collective they recovered to post full-year traffic growth in general. Financial results in 2010 markedly outperformed 2009.

European Air Traffic Management was severely tested by the Eyjafjallajökull volcano in April, causing unprecedented airspace closures and an estimated direct cost to the air transport industry of €2 billion.

The Single European Sky programme continued to make progress. Cooperation between Europe and the United States on ATM modernisation was cemented with the establishment of a Memorandum in 2010. The European Union has continued to make significant progress through its comprehensive and horizontal agreements with Non-EU states in widening the area in which the airline industry can compete freely.

For European consumers, the year presented its challenges. Although air transport in Europe continued its excellent safety record with no fatal commercial accidents, flight punctuality suffered with greater delays and cancellations due to adverse weather (particularly the Ash Cloud in April and heavy snowfalls across northern Europe in December) and industrial action.

The global industry continued its commitment to improve its environmental and sustainability credentials. It is recognised that although attaining the targets set by the industry will require dramatic gains in efficiencies, developments in engine design, airframe composite materials and ATM modernisation among others will help deliver these targets.

The salient points of the 2010 industry review are highlighted in the executive summary that follows.

Traffic

Global & European Traffic in 2010

2010 will largely be seen as a year of recovery, following the extraordinary downturn in global air traffic in 2009 which was precipitated by the Western financial and banking crisis and which led to a global economic recession beginning in 2008 and lasting throughout 2009.

Data from ICAO indicates that global passenger traffic increased by circa 8.7% in 2010 to approximately 2.5 billion passengers. By contrast, global traffic had declined by 0.7% in 2009 and 0.4% in 2008.

Airport passenger throughput at European Airports, as reported by Eurostat, increased by 6% in 2010 to an estimated 0.8 billion passengers, based on a European global passenger share of 30%.

Globally, commercial ATMs at airports were 53.6 million, up 2.1%, while movements at European airports were 15.5 million, up 0.6%.

The Chronological Year

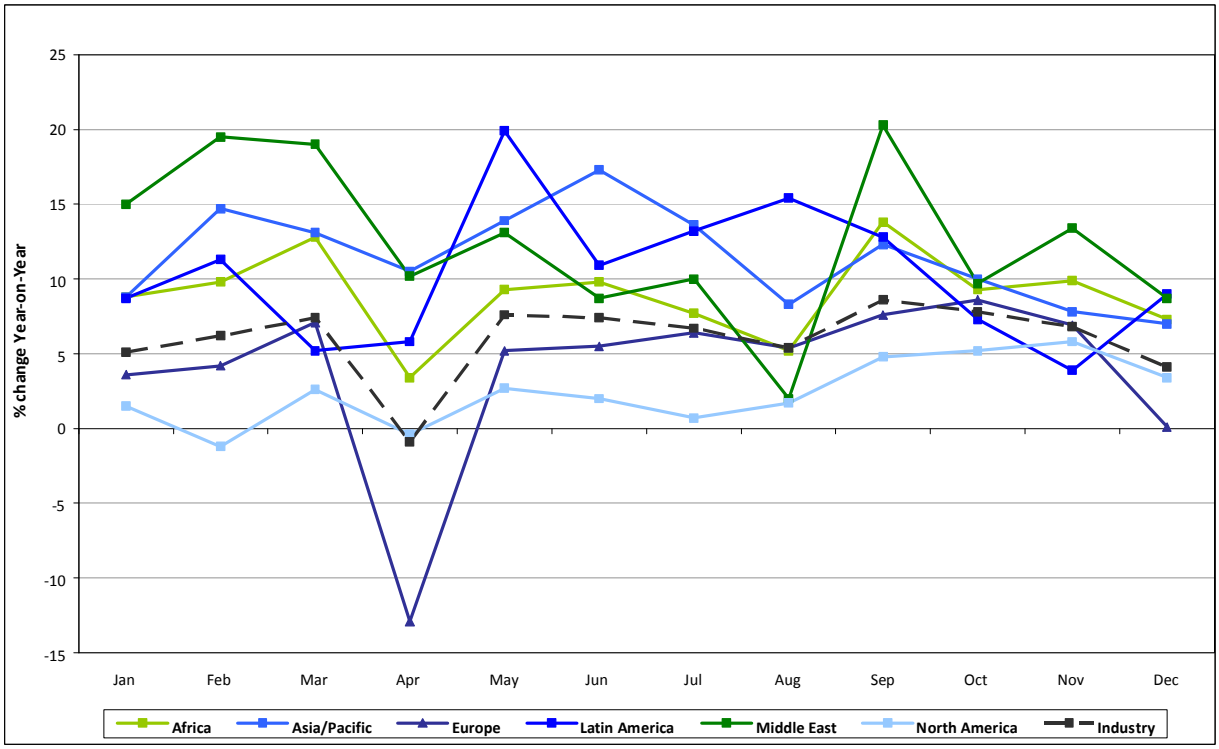
In chronological order, February 2010 saw 'unprecedented' snowfall on the eastern seaboard of the United States, severely affecting several major cities and consequently hub airports with the impact being felt most acutely on U.S. domestic and North Atlantic routes.

April witnessed the impact of the eruption of the Icelandic Eyjafjallajökull volcano which partially closed European airspace. More than 100,000 flights were cancelled over an 8 day period including, at its peak, 80% of the intra-European market with an estimated 10 million passengers affected. All global regional markets suffered declining growth in April, but Europe's airports suffered most and recorded an estimated 12% drop year-on-year.

In August and September, industrial action blighted the European air transport sector with Spanish, Belgian and French air traffic controllers holding strikes and disrupting 'business as usual' across Europe.

December saw more adverse weather conditions – this time the focus was on northern Europe with heavy snowfall affecting the UK, France and Germany most severely; and the international hub airports of London Heathrow, Frankfurt Main and Paris CDG cancelled thousands of flights over several days.

Figure 1 Monthly Airport Passengers by Region - 2010



Source: ACI

Air Travel Demand Drivers

The global recovery saw world GDP grow by 5.1% in 2010. This was compared to a 0.6% decline in 2009. European growth in the EU 27 States was more muted at 1.8% but a significant improvement on the 4.1% decline in 2009. Central and Eastern Europe grew 4.5%.

The strongest economic growth worldwide in 2010 was experienced in Asia, in particular developing Asia which includes China and India, recording growth at 9.5%; almost double the global average. This region is also forecast to experience the highest economic growth rates going forward to 2016.

The cost of jet fuel has been an increasing burden for airlines since the middle of the last decade. Today, fuel costs typically account for around 30% of an airline's operating cost. The volatile nature of kerosene price fluctuations means that commercial aircraft operators are continually struggling to keep these operating costs under control. There is a close correlation between changes in fuel price and the subsequent change in average air fares in the European and U.S. domestic markets. After a downturn in 2009, fuel prices rose again in 2010 and are set to rise further in 2011. In 2010, the annual average price of jet fuel rose to USD 2.17 from USD 1.67 per U.S. Gallon, an increase of 30%.

In 2010, the euro continued to remain strong adversely impacting the competitiveness of Eurozone tourism destinations compared to other Mediterranean resorts in Turkey and North Africa.

Value of the Air Transport Industry

In 2008, Oxford Economics conducted a study for the Air Transport Action Group (ATAG)[1] on the economic and social benefits of air transport. Drawing upon 2006-2008 data, it was estimated that providing these services generated almost 5.5 million direct jobs globally within the air transport industry and contributed USD 408 billion to global GDP. Europe's contribution was estimated at USD 118 billion and 1.5 million jobs.

Airports

According to ACI, European airport passenger throughput rose from 1.40 billion in 2009 to 1.46 billion in 2010. Europe's airports recorded 4.3% growth year-on-year, higher growth than that achieved by North American airports at 2.5%. However, this was some way below the worldwide average growth of 6.6% and still below 2008 levels by -1.2%.

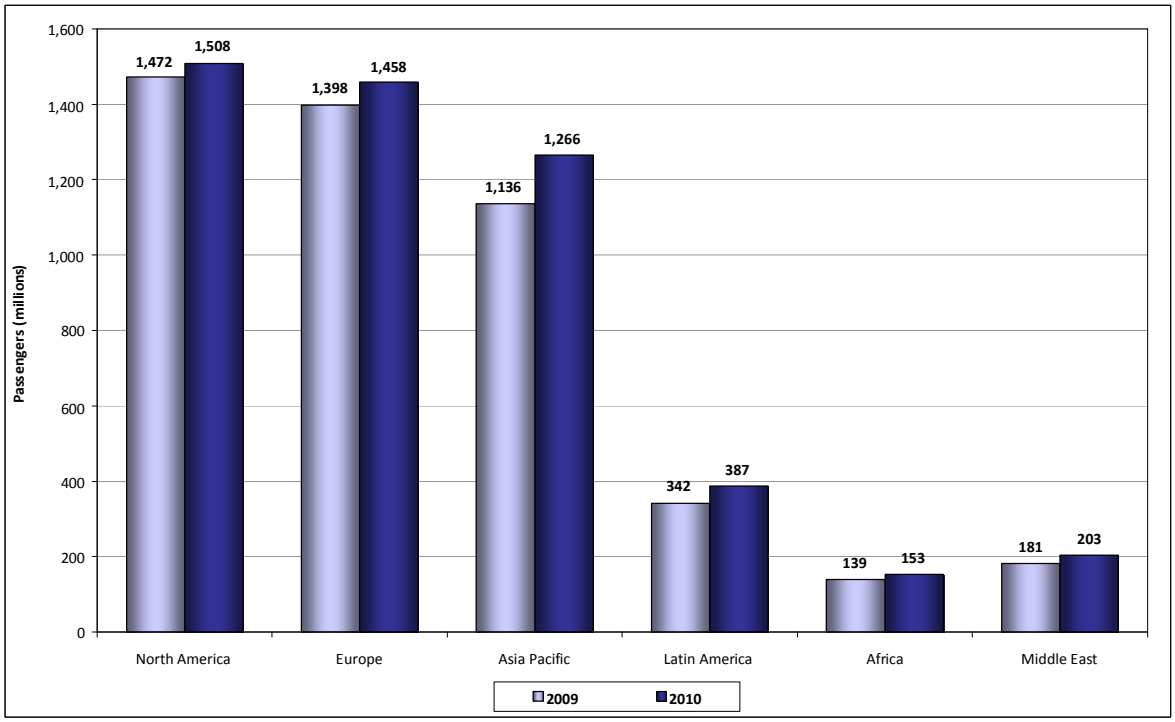
Although the European air transport market remains second only to North America by volume, the year was characterised by a continuation of one particular trend – the development of emerging markets and the stagnation in mature markets. Asia Pacific air passenger demand increased by 11.4% in 2010 over 2009, while the Middle East grew by 12.2%. Airports in Latin America showed even stronger growth at 13.4% while Africa grew by 9.9%. Each of these regions far exceeded the pace of growth experienced in the advanced mature markets of Europe and North America.

In terms of passenger volume, North American airports dominate the top 30 in the world with thirteen airports recording 637 million passengers; Asia Pacific has nine airports with 429 million passengers; EU has seven airports with 342 million passengers; and the Middle East has one airport with 46 million passengers (Dubai). In terms of growth, however, seven out of the top ten are Asia Pacific airports, with four of those Chinese (including Hong Kong S.A.R.). The bottom ten airports comprise seven North American and 3 EU.

In 2010, the world's busiest airport remained Atlanta in the U.S. with 89.2 million passengers, up 1.5% on 2009. In Europe, the busiest airport was London Heathrow with 65.7 million passengers in 2010, down 0.2% on 2009.

[1] The economic and social benefits of air transport 2008, Air Transport Action Group, April 2008

Figure 2: Annual Airport Passengers by Region, 2009 & 2010



Source: ACI

Airlines

IATA reported that in 2010 its member airlines recorded demand for scheduled air traffic showing an 8.2% increase in passenger business, measured in terms of revenue passenger kilometres. Demand growth outstripped a seat capacity increase of 4.4%. The average passenger load factor for the year was 78.4%, representing a 2.7 percentage point improvement on 2009.

The passenger growth recorded in 2010 was a significant improvement on 2009 when traffic had declined globally across all markets with the exception of the Middle East. Asia Pacific carriers recorded a 9.0% year-on-year increase in passenger demand in 2010, with the economies of China and India continuing to lead the world's recovery.

European carriers saw a year-on-year passenger demand increase 5.1%. This is double the capacity increase of 2.6% which meant that passenger load factor increased by 1.9 percentage points to 79.4%. However, Europe was the hardest hit by April's ash cloud and December's severe weather which slowed demand growth in the region.

North American carriers recorded year-on-year increases in passenger demand of 7.4% in 2010. A key feature in 2010 was the capacity discipline, where full year capacity was up by just 3.9% resulting in a passenger load factor at 82.2% for the full year (up from 79.6% in 2009).

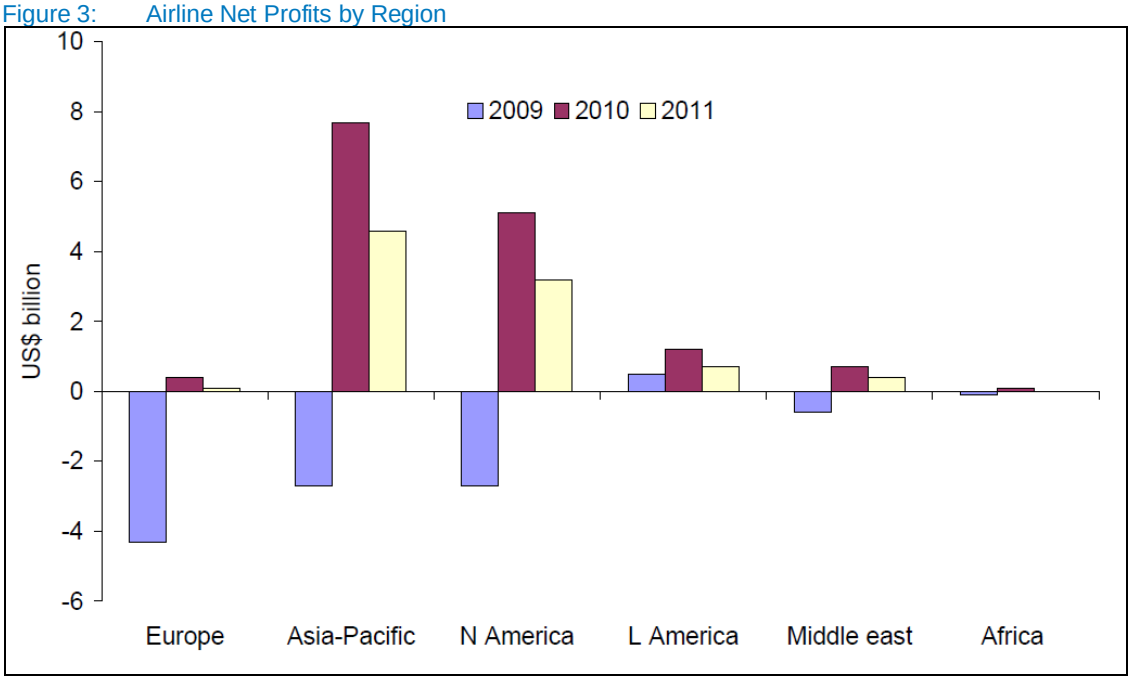
Middle Eastern carriers reported the strongest full year growth at 17.8% on the back of a 13.2% capacity increase, fuelled largely by aircraft deliveries to Gulf-based airlines – illustrating the structural shift that is taking place in the industry as a result of the region's expansion. Load factors for the region showed a three percentage point increase to 76.0%. The Middle East was the only region to see successive year on year growths.

African carriers experienced a sharp rebound of nearly 12.9% in 2010, although load factors remained well below the industry average at 69.1%. Latin American carriers saw demand grow 8.2% in 2010, recovering from a stagnating 0% growth in 2009.

Airline Finances

The cost of fuel continued to rise throughout 2010, putting immense strain on airline profitability. IATA estimated that the global airlines made a net profit of USD 16 billion in 2010, or a return of 2.9% on revenues of USD 552 billion. Although this was a great improvement on the results for 2009 (a net loss of USD 9.9 billion), the profits made were still insufficient to meet the cost of capital required to keep airlines financially fit. IATA estimates that European airlines will show only a very small level of profit for 2010, following a very poor 2009, and perhaps only a break-even situation in 2011. In comparison, large profits are forecast for Asian and North American airlines in 2010, plus a strong turn-round for Middle East airlines.

Figure 3: Airline Net Profits by Region



Source: IATA

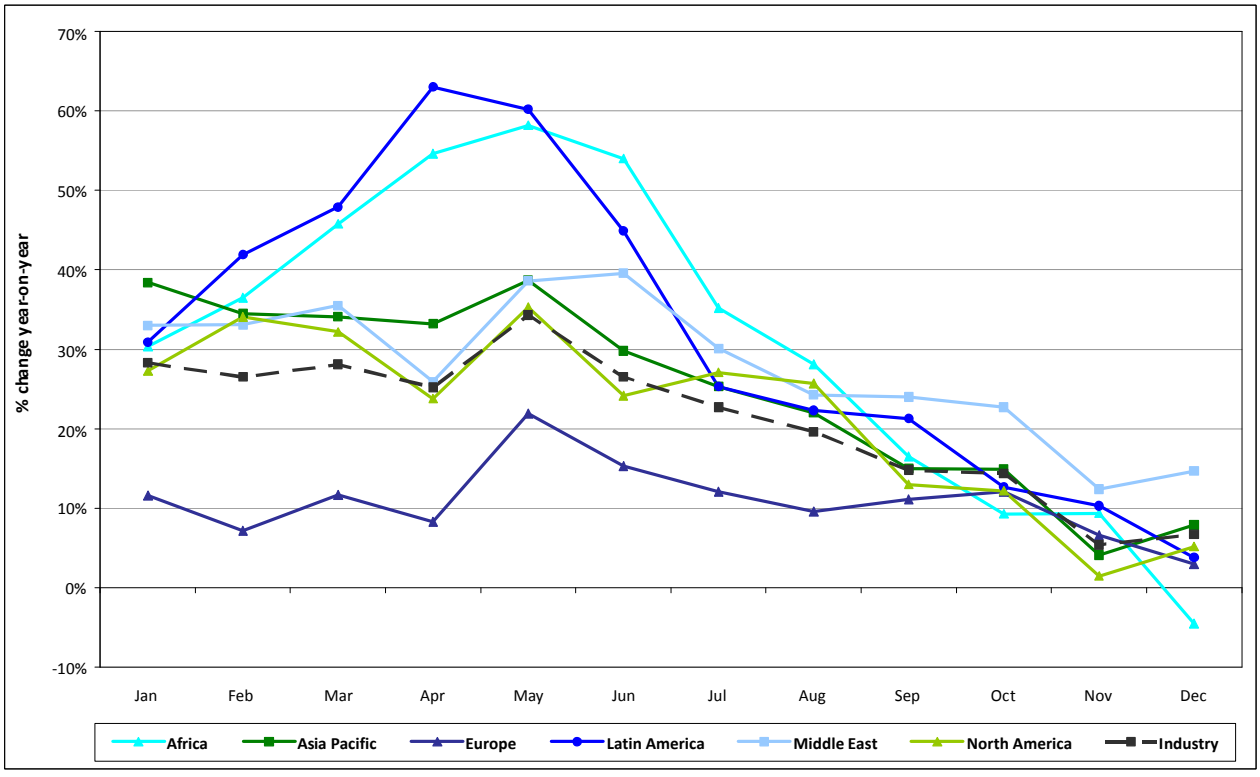
In 2010, there was a quickening in the pace of mergers between major global airlines. In the USA, the merger between United and Continental followed the previous year's merger between Northwest and Delta. In Europe, the merger between British Airways and Iberia was finally signed, mirroring the earlier groupings of Air France with KLM, and Lufthansa with Swiss, Austrian Airlines, bmi and SN Brussels airlines.

Global Air Cargo Growth

According to IATA, its member airlines recorded air cargo growth measured in Freight Tonne Kilometres (FTKs) of over 20% in 2010, a sign of global economic recovery, although the pace of growth in the second half of the year slowed down. This represents the largest increase in three decades after a decline of 10% in 2009. Demand for air cargo is an important indicator of world trade flows, which itself grew by a record 13.5% in 2010.

The regional variation in air cargo growth remains particularly marked. Latin American carriers recorded the highest full year growth rate of 29.1%, followed by Middle Eastern carriers (accounting for 11% of the market) at 26.7%. Asia Pacific airlines (with a 45% market share) grew by 24.0%, Africa at 23.8% and North America by 21.8%. Against these industry gains, Europe's 10.8% growth stands out as weak by comparison.

Figure 4 Freight Tonne Kilometre (FTK) Growth by Region 2010 vs. 2009



Source: IATA

The monthly pattern of growth reflects the full year results, with European air cargo demand the slowest to pick up. All regions except Europe followed the average industry pattern of rapid recovery in the first half of 2010 followed by a marked slowdown.

Forecasts

IATA forecasts that global air travel is expected to increase to 3.3 billion passengers by 2014, up by a third from the 2.5 billion passengers in 2010. Longer term, both Boeing and Airbus forecast average annual growth of about 5% between 2010 and 2029. Growth will be driven by strong economic activity in Asia which will act as a key driver to the industry's expansion.

Asia overtook North America as the largest aviation market in 2009 and is forecast by IATA to account for 30% of air traffic by 2014, while North America will reduce to 23% of the total. China will be the largest contributor of new passengers, accounting for 214 million (181 million domestic and 33 million international) or 27% of the 800 million increase in passengers between 2009 and 2014.

Some 360 million (45%) of the new passengers are forecast to travel on Asia Pacific routes as the United Arab Emirates, Vietnam and Malaysia witness considerable growth in international passengers. The U.S. will remain the largest single-country market for domestic passengers (671 million) and international passengers (215 million).

Passenger traffic in Europe is expected by Boeing to grow at 4.4% annually to 2029, rising from 1.3 billion RPKs in 2009 to 3.2 billion showing that despite the economic challenges it faces, the European air transport industry remains resilient.

EUROCONTROL's base case forecast for flight movements in Europe is 11.6 million IFR flights in 2017, 22% more than the 9.5 million recorded in 2010. Traffic growth will bounce back in 2011 (above 4%), but the average growth rate over the seven year period is forecast to be 2.9% per annum. The long term forecast is for 16.9 million IFR flights in 2030, under their most likely scenario. It also reports that future air traffic growth will be limited by capacity at European airports.

Air Traffic Management

Eyjafjallajökull Volcano

The eruption of the Eyjafjallajökull volcano in Iceland on 14 April 2010 caused widespread and unprecedented airspace closures in Europe over the subsequent eight days, with the disruption of over 100,000 flights and an estimated 10 million passenger journeys. This volcanic event resulted in an interruption in global air traffic to an extent not seen since 11 September 2001 and the largest breakdown in European civil aviation since World War II. The direct financial impact on the air transport industry of the airspace closures was estimated at around €2 billion, with the total knock-on impact on global GDP of €3.7 billion.

There was considerable concern expressed by the airlines about the apparent confusion surrounding the airspace closure decisions. In 2010, ICAO formed an International Volcanic Ash Task Force which, in December, issued an updated volcanic ash contingency plan for the ICAO Europe and North Atlantic Regions and interim guidance material for the management of flight operations with known or forecast volcanic cloud contamination.

The European Commission and EUROCONTROL have created a European Aviation Crisis Co-ordination Cell (EACCC) to coordinate a timely response to any future pan-European crisis severely affecting aviation. A major European and North Atlantic volcanic ash exercise is planned for April 2011 to simulate and test the revised procedures that have been developed.

ATM Cost Effectiveness

Most European Member States recover the costs of providing Air Navigation Services on a full cost-recovery basis, which means there is little incentive for ANSPs to reduce costs year-on-year. Whilst voluntary targets introduced in 2003 through EUROCONTROL have had some success in improving cost effectiveness in recent years, the latest downturn in traffic is likely to have led to a deterioration.

To tackle this issue, Regulation 691/2010[2] was adopted in June 2010 to establish a performance scheme for air navigation services under the second package of the Single European Sky (SES II). The aim of the performance scheme is to contribute to the sustainable development of the air transport system by improving the overall efficiency of air navigation services across the key performance areas of safety, environment, capacity and cost-efficiency. Furthermore, in December 2010, Regulation 1191/2010[3] was adopted which amends earlier legislation laying down a common charging scheme for air navigation services in Europe. The new Regulation requires financial incentives and penalties to be set in relation to improving ATM performance.

Other Aspects of the Single European Sky

Progress continues to be made during the development phase of SESAR and in the implementation of Functional Airspace Blocks (FABs). In 2010, a Memorandum of Co-operation in civil aviation research and development was established between the European Commission and the FAA. This will help ensure the continuing co-operation and harmonisation of the SESAR and NextGen ATM modernisations programmes.

The Internal Market & Competition

Competition Issues

The EU remains vigilant over possible illegal price fixing. It co-operates with other bodies both within the Community and around the world in its investigations of price fixing and, where proven and justified, imposes fines, to protect consumers.

In September, Germany's competition authority fined the air carrier Condor €1.2 million for illegally fixing prices on routes to Turkey, having colluded with Lufthansa joint venture airline SunExpress.

In November, the Commission fined eleven air cargo carriers almost €800 million for operating a global air cargo cartel on routes to and from Europe. Five European airlines were fined. Lufthansa was however

[2] Commission Regulation (EU) No 691/2010 laying down a performance scheme for air navigation services and network functions and amending Regulation (EC) No 2096/2005, 29 July 2010

[3] Commission Regulation (EC) No 1191/2010 amending Regulation (EC) No 1794/2006, 16 December 2010

granted immunity following its leniency application. The carriers had coordinated their fuel and security surcharges over a six year period.

For decades there has been a dispute between the U.S. and the EU over subsidies and other forms of aid for the world's two dominant makers of civil aircraft, Boeing and Airbus. Both sides accuse the other of distorting competition within the sector by receiving various forms of aid. Since October 2004 the World Trade Organization has been drawn into the dispute, which has recently been drawing to a close.

The WTO has issued two 'panel reports', consisting of a finding in June 2010 which concluded that repayable European loans to Airbus had illegally subsidised its aircraft programmes; and then an 'interim finding' in 15 September 2010 concluding that Boeing had received illegal subsidies in the form of non-repayable grants through contract work for NASA and the U.S. Department of Defense. On 31 January 2011 the WTO issued its final report (on a confidential basis to both companies) which confirmed its interim findings of September 2010.

In the UK, the Competition Commission reconfirmed its decision to oblige airport operator BAA to sell its airports at Stansted and either Glasgow or Edinburgh in order to increase competition. Gatwick Airport had been sold under OFT direction in December 2009.

The EU has continued to make significant progress through its comprehensive and horizontal agreements with non-EU states in widening the area in which the airline industry can compete freely.

Internal Market Issues

There were no major primary aviation regulatory or legislative actions relating to this area implemented by the EU during 2010. However, earlier legislation is beginning to have some impact on the aviation industry and consultations were undertaken on potential improvements to existing legislation.

The most significant impact felt by airlines was from the application of consumer protection Regulation 261/2004 following the volcanic ash incident in April 2010; and the exceptional snow conditions over much of Europe during December.

The closure of European air space because of the ash cloud was an unprecedented event. During the crisis, Regulation 261 remained fully applicable, with the closure being immediately qualified EU-wide as an exceptional circumstance. However, the volcanic event exposed some of the structural limits of the Regulation, which were tested under the magnified scale of the crisis. For example, the proportionality of some the current measures, like the unlimited liability regarding the right to care under major natural disasters, was called into question. Member States and the Commission have agreed to reflect on how to ensure that, in the future, this consumer care which in the volcano crisis was provided solely by part of the industry is correctly shared and financed.

The Commission has committed to work with the National Enforcement Body (NEB) Network to agree on harmonised interpretation of Regulation 261, and it will launch in 2011 an Impact Assessment to assess the proportionality of the current measures in the light of experience and the costs of the regulation for stakeholders, with a view to propose further measures on Air Passenger Rights (APR), including of a legislative nature, in 2012

Another area of concern for the aviation industry during 2010 was the increasing divergence of attitudes by Member States towards the taxation of aviation, particularly with reference to the imposition of increased

levels of Air Passenger Duty (APD) by the UK and of a similar tax by Germany. During the year, Ireland announced plans to reduce its equivalent APD from €10 to €3 in 2011, while the Netherlands dropped its tax altogether. Belgium has also decided against APD-style taxation.

Aircraft Manufacturing & MRO

The European aeronautics industry is responsible for the design, development and production of a broad range of aviation products including civil and military aircraft, aero engines, helicopters, unmanned aerial vehicles and their associated systems, parts and equipment. It also includes activities associated with Maintenance, Repair and Overhaul (MRO).

The turnover of the European aeronautic sector in 2009 (civil and military aeronautics but excluding space activities, land and naval defence) totalled €100.4 billion, an increase of 3.2% over 2008. This represents a 5.2% CAGR in turnover since 2005. The number of persons employed in aeronautics reached 468,300, a marginal increase of 0.3% over 2008, despite the world economic downturn. In total terms of total aerospace sales, Europe accounted for 37.4% of the market in 2009 and the U.S. 52.6%.

Europe is a net exporter of aerospace and aviation products. In 2009 aerospace exports to the world from EU27 countries totalled €41.4 billion. The European aeronautics industry also contributes a large share of its activity to research and development. In 2009 R&D expenditure in the European aeronautics sector totalled €12.2 billion, which accounted for 12.1% of total turnover. However, the value of R&D spending has remained relatively flat over time, as has its proportion of total turnover.

Concerns about skill shortages are widespread in the aerospace industry. European sources indicate that availability of skilled workers and engineers has emerged as an important issue, particularly as the demand for such workers grows with increased European production of civil and military aircraft and requirements for R&D programmes. Experts estimated that Europe's aerospace industry faces a shortage of perhaps 25,000 engineers per year.

The global market value of MRO in 2010 was USD 42.3 billion, down 7.4% from the USD 45.7 billion achieved in 2009. The greatest proportion of MRO activity is due to engine maintenance, at 43%. The regional distribution of MRO activity is comparable to the global air transport market, with a centre of gravity in North America followed by Western Europe and the emerging Asia-Pacific Region. The decline in 2010 has been mainly due capacity reductions made by airlines in 2009. Reductions in capacity have been most pronounced in North America, Europe and Asia-Pacific (excluding China). In contrast, China and the Middle East are continuing to see robust growth but account for a relatively small share of the global market.

Global Airline Fleet

In 2010, the global airline fleet of civil jet aircraft (widebody, narrowbody and regional jets) was 20,168 aircraft, of which 6,645 (33%) were based in Europe. Boeing and Airbus aircraft types account for 73% of this global airline fleet.

In 2010, Airbus delivered 496 aircraft (+1.4% versus 2009), and booked 574 aircraft orders (+122%). Boeing delivered 448 aircraft (-4.3% versus 2009) and reported 530 orders (+273%).

The civil passenger turboprop aircraft market is smaller than the jet market but still significant. As of 31st December 2010, JP Airline Fleets International database recorded 4,553 civil passenger turboprop aircraft in service at a global level. Of this, 684 (or 15%) were registered in the European Union.

Environment

Industry Targets

Following ICAO's 37th Assembly in Montreal in October 2010 and the United Nations Framework Convention on Climate Change (UNFCCC) summit in Cancun in December 2010, ICAO is claiming success at securing a global framework to reduce greenhouse gas (GHG) emissions from aviation. Under this framework (ICAO Resolution A37-19) confirmed in Montreal, its 190 member states purportedly signed up to a global objective of improving fuel efficiency by 2% a year until 2050, while striving to collectively achieve carbon neutral growth from 2020. The resolution also called for the development of a global framework to manage market based measures, such as emissions trading schemes and taxation, to be reviewed in 2013.

ATAG has adopted collective global industry targets, including a 1.5% average annual fuel efficiency improvement through to 2020, carbon neutral growth from 2020 and a trajectory towards halving net carbon emissions by 2050 compared with 2005. These targets are dependent upon advancements in technologies and sustainable fuels.

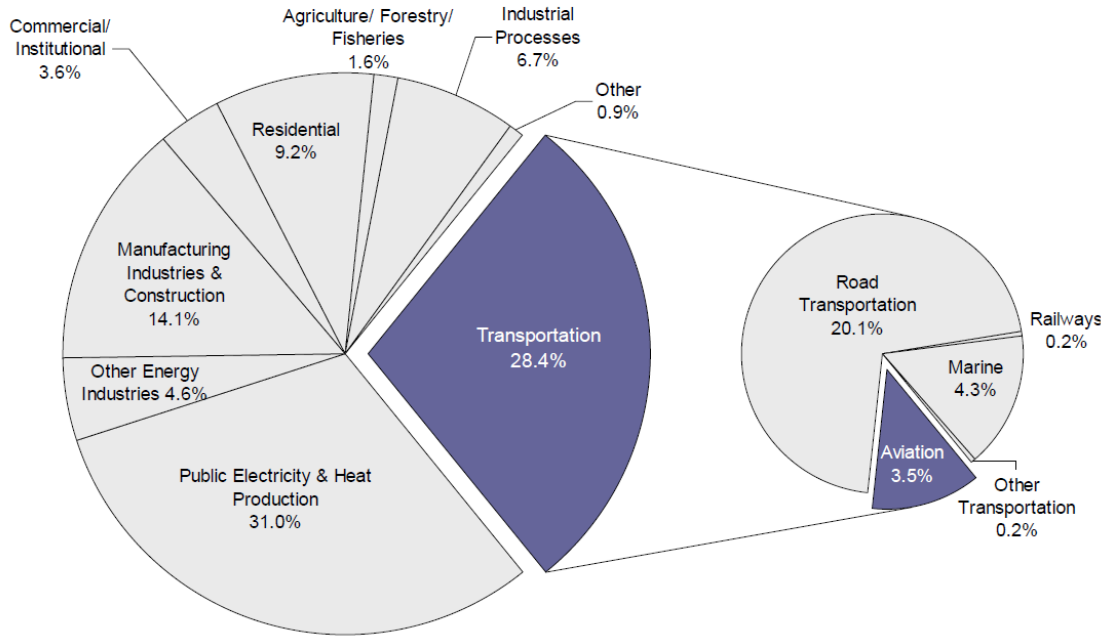
European Union Emissions Trading Scheme (EU ETS)

The EU ETS was implemented in 2005 and now spans the EU27 member states, covering the most energy-intensive sectors and representing around half of European greenhouse gas emissions. Domestic and international aviation will be included in the scheme from 2012 and airlines are now preparing for compliance. All airlines with operations at a European airport, be it a European or foreign carrier, are obligated to comply with the regulations.

In 2010, European CO_2 emissions increased by 2.7%. The UK is by far the most significant contributor of CO_2 emissions from aviation, in line with its position as the leading air transport market in Europe and in part due to its island status. Germany follows as the second largest emitter, while France and Spain make up the top four.

Aviation emissions account for 3.5% of man-made CO_2 emissions in Europe. The breakdown for all contributors by sector is shown in Figure 5 below.

Figure 5 Contribution of CO_2 Emissions by Sector in EU27 Area (2007)



Source: EUROCONTROL

Industry Developments

Attaining the operational and environmental efficiencies necessary to ensure the airline industry is able to achieve unconstrained growth over the next four decades will require dramatic gains.

Both SESAR and the U.S. NextGen ATM modernisation programmes are designed to implement a series of measures aimed at reducing GHG emissions and improving operational efficiencies. In addition the EC and the FAA have established the Atlantic Interoperability Initiative to Reduce Emissions (AIRE). AIRE aims to deliver the development and implementation of environmentally friendly procedures for all phases of flight (gate-to-gate) and validate continuous improvements with trials and demonstrations. A similar initiative, ASPIRE, has been developed in the Asia Pacific Region.

Additional efficiencies will be achieved through the use of advanced materials such as composites. Newer and lighter aircraft such as the B787 Dreamliner and the A350 XWB will require less fuel than older counterparts to complete the same flight journeys. The use of biofuels, which provide a carbon-neutral fuel source, will also play a major role in reducing the impact of carbon emissions. Virgin Atlantic, Air New Zealand, Japan Airlines, Qatar Airways, Continental Airlines, United Airlines and Air France-KLM have all successfully tested biofuels and alternative fuels and more airlines are set to join them in 2011.

Safety

Fatal Accidents Worldwide

In 2010 there were 26 fatal airline accidents worldwide causing the deaths of 817 passengers and crew. This spans all types of commercial airline operations, including scheduled and non-scheduled passenger flights, by jets and turboprop aircraft; and non-passenger operations such as cargo or positioning flights. In 2009 there were 28 fatal airline accidents causing 749 deaths. The Figure shows the global twenty year trend in fatal accidents per 10 million flights which takes into account the increase in traffic over that period.

Whilst the longer term trend demonstrates a four-fold improvement in the annual numbers of fatal accidents per 10 million flights over the last twenty years, the graph indicates a flattening of the downward trend in the last ten years. The annual number of fatal accidents globally has remained somewhere between 25 and 40 since 2001, equivalent to between 3 and 7 fatal accidents in every 10 million flights.

Figure 6 Global Fatal Accident Rate (per 10 million Flights) 1990 to 2010

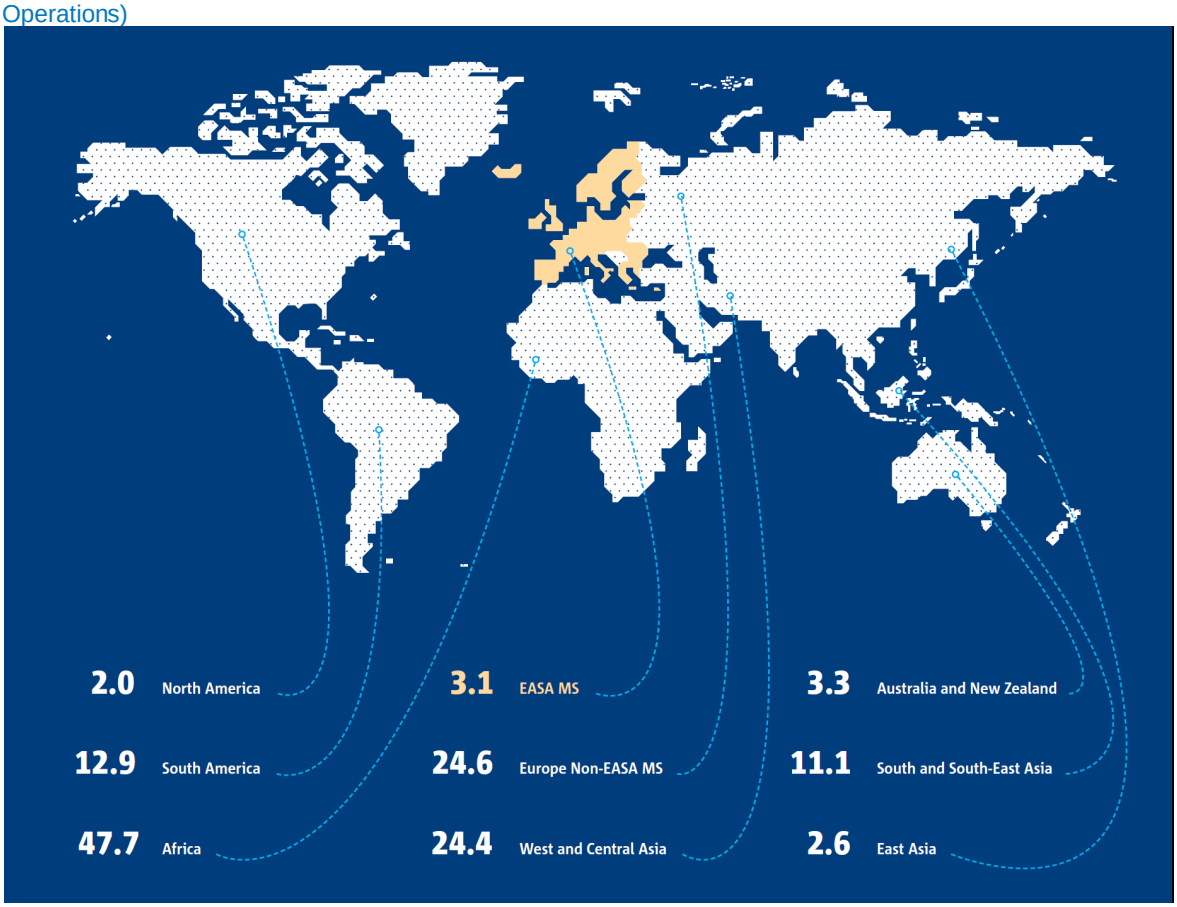
Source: EASA Annual Safety Review 2010

In June 2011, EASA highlighted the different rates of fatal commercial aviation accidents by world region over the last ten years. Operators from the 31 EASA Member State countries[4], along with those from the regions of North America, East Asia, Australia and New Zealand have exhibited the lowest average rates of fatal accidents over the last ten years at between 2.0 and 3.3 fatal accidents per million flights. By contrast,

[4] EU27 plus Iceland, Liechtenstein, Norway and Switzerland

the average fatal accident rate in other world regions ranges from 11.1 per 10 million flights in South and South-East Asia to 47.7 per 10 million flights in Africa. Whilst in 2010 there were no fatal commercial aviation accidents in Europe, the average accident rate for operators from European Non-EASA Member States over the last ten years has been 24.6 per 10 million flights which is over seven times the rate for the remainder of Europe.

Figure 7: Fatal Accident Rate per 10 Million Flights by World Region, 2001 to 2010 (Scheduled Passenger & Cargo Operations)



Source: EASA Annual Safety Review 2010

Worldwide, runway excursions – usually overruns after landing – continue to be by far the most common type of aircraft accident, normally leading to aircraft damage but not often involving fatalities. The worst runway excursion in 2010 involved an Air India Express Boeing 737-800 that overran the runway at Mangalore, despite good weather and a dry surface. After an unstable approach, the aircraft touched down long and fast and ran off the end of the runway down a very steep slope killing 158 people.

Industry commentators believe that between 15% and 20% of aviation accidents could be due to fatigue-related causes, and the FAA and EASA are trying to harmonise their respective regulations on flight time limitations and rest requirements for commercial air transport pilots. Another concern is with pilot training. Aircraft flight decks have changed radically over the past sixty years, with accelerated change in the last 20 with the advent of all glass cockpits and greater systems integration. As a result, there has been a concurrent change in the way in which pilots manage normal flight operations. The FAA is spearheading research into the way pilots use Flightpath Management Systems in order to try and improve pilot training in this area.

In terms of spreading best practice, IATA, ICAO and EASA have continued to develop and strengthen their Safety Oversight programmes in 2010.

Incident Reporting

Whilst in general, aviation accidents are well reported, there is some degree of variability of reporting of incidents across Europe. While in 2010, there has been a major improvement in the number of EASA Member States integrating their occurrence data into the European Central Repository, there remain significant shortfalls in the quality and completeness of the data recorded. EUROCONTROL estimates that as many as 30,000 incidents may not be being reported each year in the ECAC region – and this is only in the field of ATM. Although the number of ECAC States reporting ATM incidents had increased by 1 to 30 (out of 43) by the end of March 2010, this number has not changed in the previous five years.

Safety KPIs are being introduced under the SES II Performance Scheme to address issues of safety management effectiveness, harmonised rules for the reporting of incidents and the establishment of a "Just Culture" for incident reporting in Member States.

Delay Performance

Using the data provided by airlines to the EUROCONTROL CODA database, primary delays caused by airlines reduced as a percentage of all delays from 49.4% in 2009 to 41.8% in 2010, but ATFCM (Air Traffic Flow and Capacity Management) delays increased from 25.1% to 32.5%. The percentage of delays due to weather also increased.

In 2010 the average total departure delay per delayed flight was 33 minutes, a 17% increase over 2009, and the percentage delayed by more than 15 minutes increased from 18% to 23%. The average delay expressed across all departures (including those flights not delayed) increased to a 5-year peak of 14.8 minutes, an increase of 40% over 2009.

Although 2010 included the ash cloud crisis, the impact of this event in April and May was mainly upon cancellations rather than increased delays. In the summer peak it was primarily ATC industrial action and staffing related issues which had a significant impact on aircraft delays. France had the largest share of delays caused by industrial action, while Germany and Spain also suffered to a lesser extent. 2010 was also impacted by the airport delays caused by the heavy snowfalls in December across northern Europe.

Security

EU New Legislative Package

29 April 2010 marked the date at which Regulation (EC) No 300/2008 and its implementing provisions entered into force. This new regulatory framework consolidated and repealed for clarification reasons various European legal acts adopted under the former framework of Regulation (EC) No 2320/2002.

Air Cargo Security

In October 2010, two separate explosive devices were concealed within toner cartridges inside printers and sent via air freight to Chicago, U.S. from Yemen, but were intercepted and defused. Both devices were wired to circuit boards from mobile phones and it is assumed that the intention was to use the phones as timers in order to detonate the devices onboard the aircraft, possibly over the U.S.

The bomb plot highlighted wider weaknesses in air cargo security and, in November 2010, ICAO proposed amendments to Annex 17 to address them. In support of this IATA are calling for the global application of a cargo security assurance process[5] based on the supply chain approach, which means that from the moment a box is packed until the moment it arrives at the aircraft, train, truck or ship, it is protected from tampering. In December 2010 the European Commission presented an action plan to strengthen air cargo security[6].

Use of Enhanced Security Scanners ('Body Scanners')

On 25 December 2009 the attempted terrorist attack with hidden explosives on NWA Flight 253 highlighted the limits of metal detectors, commonly used at airports, in detecting non-metallic threat items on persons. As an immediate reaction several countries have accelerated the further development and eventual deployment of more advanced technology capable of detecting non-metallic and liquid explosives.

In January 2010, TSA was given a mandate in the U.S. to increase the use of enhanced screening techniques technologies for inbound passengers (specifically from known threat countries) on international flights. In March 2010 TSA began deploying 450 advanced imaging technology units or 'body scanners' which are designed to give airport security staff a much better chance of detecting explosives or other potentially harmful items hidden on a passenger's body. By November 2010 enhanced screening procedures (including the more widespread use of advanced security scanners) had been implemented at all U.S. airports.

At present the situation in Europe is fragmented as security scanners, where used, are not systematically and uniformly deployed by Member States at their airports. In addition, their use is not harmonised in terms of operational conditions as they are regulated at national level.

In February 2010 EU Transport Ministers met to discuss this issue and in June the European Commission produced a detailed Communication on the use of security scanners at EU airports[7]. The Communication is subject to discussion within the European Parliament and the Council; and Stakeholders have been asked to provide opinions to a Task Force set up to determine the next steps.

Carriage of Liquids, Aerosols and Gels (LAGs)

In 2010, following the development of more sophisticated screening technologies, the European Commission through Regulation 297/2010[8] indicated a gradual move away from banning most liquids in hand luggage to a system where hand luggage is screened for liquid explosives.

[5] Passenger and Cargo Security Update, Presentation for IATA Global Media Day, December 2010

[6] A European Action Plan to Strengthen Air Cargo Security, IP/10/1651, 2nd December 2010

[7] Communication from the Commission to the European Parliament and the Council on the Use of Security Scanners at EU Airports, COM(2010) 311/4, June 2010

[8] Commission Regulation (EU) No 297/2010 amending Regulation (EC) No 272/2009 supplementing the Common Basic Standards in Civil Aviation Security, 9th April 2010

Glossary

AACO	Arab Air Carriers Organisation
AAGR	Average Annual Growth Rate
AAPA	Association of Asia Pacific Airlines
ACARE	Advisory Council for Aeronautics Research in Europe
ACAS	AirCraft Analytical System
ACCC	Australian Competition and Consumer Commission
ACI	Airports Council International
ACL	Airport Coordination Limited
AdP	Aéroports de Paris
ADS-B	Automatic Dependent Surveillance-Broadcast
AEA	Association of European Airlines
AED	UAE Dirham
AEG-SEC	APEC Aviation Security Sub Group
AFRAA	African Airlines Association
AFTK	Available Freight Tonne Kilometres
AIA	Aerospace Industries Association of America
AIAC	Aerospace Industries Association of Canada
AIRE	Atlantic Interoperability Initiative to Reduce Emissions
AIS	Aeronautical Information Service
ALTA	Latin American and Caribbean Air Transport Association
AMC	Acceptable Means of Compliance
AME	Aircraft Maintenance Engineer
ANS	Air Navigation Service
ANSP	Air Navigation Service Provider
APAM-AVSEC	Asia Pacific Ministerial Conference on Aviation Security
AP-ASAP	Asia-Pacific Aviation Security Action Plan
APD	Air Passenger Duty
APEC	Asia Pacific Economic Cooperation
APR	Air Passenger Rights
ASD	AeroSpace and Defence Industries Association of Europe
ASEAN	Association of Southeast Asian Nations
ASK	Available Seat Kilometre
ASPIRE	Asia Pacific Initiative to Reduce Emissions
ASR	Air Services Regulation
ASSA-I	Aviation Security Services Association – International
ATA	Air Transport Association of America
ATAG	Air Transport Action Group

ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATFCM	Air Traffic Flow & Capacity Management
ATFM	Air Traffic Flow Management
ATI	Air Transport Intelligence
ATM (1)	Air Traffic Management
ATM (2)	Air Transport Movement
ATOL	Air Travel Organiser's Licence (UK)
ATR	Aerei da Trasporto Regionale or Avions de Transport Régional
ATS	Air Traffic Services
AVIC	China Aviation Industry Corporation
BA	British Airways
BAA	BAA Airports Ltd
BALPA	British Air Lines Pilot Association
BHX	Birmingham Airport
BMI	BMI British Midland
BRIC	Brazil, Russia, India & China
CAA	Civil Aviation Authority
CAAS	Civil Aviation Authority of Singapore
CAD	Canadian dollar
CAGR	Compounded Annual Growth Rate
CAN	Guangzhou Baiyun International Airport
CANSO	Civil Air Navigation Services Organisation
CAPA	Centre for Asia Pacific Aviation
CAT	Commercial Air Transport
CCD	Continuous Climb Departure
CDA	Continuous Descent Approach
CDG	Paris Charles de Gaulle Airport
CDM	Collaborative Decision Making
CEO	Chief Executive Officer
CFMU	EUROCONTROL Central Flow Management Unit
CFRP	Carbon Fibre Reinforced Plastic
CGK	Jakarta Soekarno-Hatta International Airport
CHF	Swiss franc
CLT	Charlotte Douglas International Airport
CNS	Communications, Navigation & Surveillance
CNY	Chinese yuan

CODA	EUROCONTROL Central Office for Delay Analysis
COMAC	Commercial Aircraft Corporation of China Ltd
CPA	Capacity Purchase Agreement
CRCO	EUROCONTROL Central Route Charges Office
CSU	Chargeable Service Units
CTTF	APEC Counter Terrorism Task Force
DBC	Denied Boarding Compensation'
DEN	Denver International Airport
DfT	UK Department for Transport
DGAC	Direction Générale de l'Aviation Civile
DHS	U.S. Department of Homeland Security
DKK	Danish krone
DME	Moscow Domodedovo International Airport
DOT	U.S. Department of Transportation
DSNA	Direction des Services de la Navigation Aérienne (France)
DXB	Dubai International Airport
EACCC	European Aviation Crisis Coordination Cell
EACP	European Aerospace Cluster Partnership
EADS	European Aeronautic Defence and Space Company N.V.
EAS	Essential Air Service
EASA	European Aviation Safety Agency
EBIT	Earnings Before Interest & Taxes
EBITDA	Earnings before interest, tax, depreciation & amortisation
EC	European Commission
ECAA	European Common Aviation Area
ECAC	European Civil Aviation Conference
ECR	European Central Repository for Aviation Occurrences
EDI	Edinburgh Airport
EEA	European Economic Area
EEC	European Economic Community (now the EU)
EGP	Egypt Pound
ELFAA	European Low Fares Airline Association
ENP	European Neighbourhood Policy
EOL	End of Service Life
EPZ	Enhanced Procedure Zone
EQF	European Qualification Framework
ERA	European Regions Airlines Association

ERAA	European Regions Airline Association
ETS	Emission Trading Scheme
EU	European Union
FAA	Federal Aviation Administration
FAB	Functional Airspace Block
FCO	Leonardo da Vinci-Fiumicino Airport
FHS	Flight Hour Services
FIR	Flight Information Region
FMS	Flight Management System
FTK	Freight Tonne Kilometres
FYROM	Former Yugoslav Republic of Macedonia
GAO	U.S. Government Accountability Office
GBP	British Pound Sterling
GDP	Gross Domestic Product
GDS	Global Distribution Systems
GHG	Greenhouse Gas
GIG	Rio de Janeiro-Galeão International Airport
GLA	Glasgow Airport
GM	Guidance Material
GPS	Global Positioning System
GSIC	IATA Global Safety Information Centre
GSIE	Global Safety Information Exchange programme
HKD	Hong Kong dollar
HKG	Hong Kong International Airport
HMV	Heavy Maintenance Visit
IACA	International Association of Charter Airlines
IAG	International Airlines Group
IATA	International Air Transport Association
IAVW	International Airways Volcano Watch
ICAO	International Civil Aviation Organisation
IFE	In-flight Entertainment System
IFR	Instrument Flight Rules
IMF	International Monetary Fund
INECO	Ingeniería y Economía del Transporte
INR	Indian rupee
IOSA	IATA Operational Safety Audit
IPO	Initial Public Offering

IPSOA	IATA Implementation Programme for Safety Operations in Africa
IVATF	International Volcanic Ash Task Force
JAL	Japan Airlines
JAXA	Japan Aerospace Exploration Agency
JCAB	Japan Civil Aviation Bureau
JFK	John F. Kennedy International Airport
JTI	Joint Technology Initiative
KPI	Key Performance Indicator
LAGs	Liquids, aerosols & gels
LAN	Línea Aérea Nacional de Chile (LAN Chile)
LCC	Low Cost Carrier
LCY	London City Airport
LGW	London Gatwick Airport
LHR	London Heathrow Airport
LP	Low pressure
LTN	London Luton Airport
MAD	Madrid Barajas Airport
MAG	Manchester Airports Group
MAN	Manchester Airport
MBM	Market Based Measures
MINT	Minimum CO_2 in the TMA
MLITT	Japanese Ministry of Land, Infrastructure, Transport & Tourism
MLW	Maximum Landing Weight
MM	Mott MacDonald
MRO	Maintenance, Repair & Overhaul
MTOW	Maximum Take-off Weight
MUC	Munich Franz Josef Strauss International Airport
MWO	Meteorological Watch Office
NAS	National Airspace System
NASA	U.S. National Aeronautics and Space Administration
NAT	North Atlantic Track
NATS	NATS Ltd (UK)
NB	Narrowbody Aircraft
NCL	Newcastle International Airport
NEB	National Enforcement Body
NFZ	No Fly Zone
NGSP	Next Generation Screening Process

NPRM	Notice of Proposed Rulemaking
NRT	Tokyo Narita International Airport
NSA	National Supervisory Authority
NTSB	National Transportation Safety Board
NWA	Northwest Airlines
OAG	Official Airline Guide
OECD	Organisation for Economic Co-operation and Development
OEM	Original Equipment Manufacturer
OFT	UK Office of Fair Trading
ORD	Chicago O'Hare International Airport
ORY	Paris Orly Airport
PBN	Performance Based Navigation
PEK	Beijing Capital International Airport
PETN	Pentaerythritol tetranitrate
PRB	SES Performance Review Body
PRC	EUROCONTROL Performance Review Commission
PRM	Person of Reduced Mobility
PRR	EUROCONTROL Performance Review Report
PSO	Public Service Obligation
PVG	Shanghai Pudong International Airport
R&D	Research & Development
RETACDA	Reduction of Emissions in Terminal Areas (TMA) using Continuous Descent Approaches (CDA)
RLA	Repayable Launch Aid
RPK	Revenue Passenger Kilometre
SAFA	EC Safety Assessment of Foreign Aircraft
SAFUG	Sustainable Aviation Fuel Users Group
SARS	Severe Acute Respiratory Syndrome
SDG	Steer Davies Gleave
SES	Single European Sky
SESAR	Single European Sky ATM Research
SFO	San Francisco International Airport
SIB	Safety Information Bulletin
SIN	Singapore Changi International Airport
SITC	Standard Industry Trade Classification
SJAC	The Society of Japanese Aerospace Companies
SME	Small and Medium-Sized Enterprises

STN	Stansted Airport
SWAFEA	Sustainable Way for Alternative Fuel and Energy in Aviation
SWIM	System Wide Information Management
SYD	Sydney Airport
TAM	TAM Linhas Aéreas (TAM Airlines)
TAWS	Terrain Awareness and Warning System
THB	Thai baht
TJFTZ	Tianjin Free Trade Zone
TLZ	Time-Limited Zone
TMA	Terminal Manoeuvring Area
TRY	Turkish Lira
TSA	Transportation Security Administration
TSU	Total Service Unit
U.S.	United States of America
UAC	United Aircraft Corporation
UAE	United Arab Emirates
UK	The United Kingdom
UNFCCC	United Nations Framework Convention on Climate Change
USAP	Universal Security Audit Programme
USD	U.S. Dollars
USOAP	Universal Safety Oversight Audit Programme
UTC	Coordinated Universal Time
VAAC	Volcanic Ash Advisory Centre
VAT	Value Added Tax
WB	Widebody Aircraft
WTO	World Trade Organization
YoY	Year-on-Year
ZAR	South African Rand