

Annual Analyses of the EU Air Transport Market 2013

Final Report

April 2015

European Commission

Mott MacDonald

Annual Analyses of the EU Air Transport Market 2013

Final Report

April 2015

European Commission

Mott MacDonald, Mott MacDonald House, 8-10 Sydenham Road, Croydon CR0 2EE, United Kingdom
T +44 (0)20 8774 2000 **F** +44 (0)20 8681 5706 **W** www.mottmac.com

Issue and revision record

Revision	Date	Originator	Checker	Approver	Description	Standard
A	24.04.15	Various	K. Tiligadis	J Cole	Final Report	

Content

Executive Summary

Foreword

This report describes developments in the European air transport industry and global aviation trends during 2013 and is structured in 10 chapters covering:

- Air Traffic Trends
- Air Transport Forecasts
- Airlines
- Airports
- Aircraft Manufacturing and MRO
- Air Traffic Management
- Market and Competition Issues
- Environment and Sustainable Development
- Aviation Safety and Security
- Consumer Issues

This Executive Summary provides highlights of the main report.

Air Traffic Trends

The International Civil Aviation Organisation (ICAO) reported that airlines of its 191 member states carried 3.1 billion passengers in 2013, a +4.5% increase on 2012.

Growth in terms of Revenue Passenger Kilometres (RPKs) was +5.2% on a worldwide basis in 2013 (up slightly from +4.9% growth in 2012). The highest growth rates continue to be in the emerging markets of Asia, Africa and the Middle East, with below-average growth in the more mature markets of Europe and North America. Airline capacity growth, measured in Available Seat Kilometres (ASKs), was slightly slower at +4.6% in 2013, resulting in a 0.4 point improvement in average load factors to 79.1%.

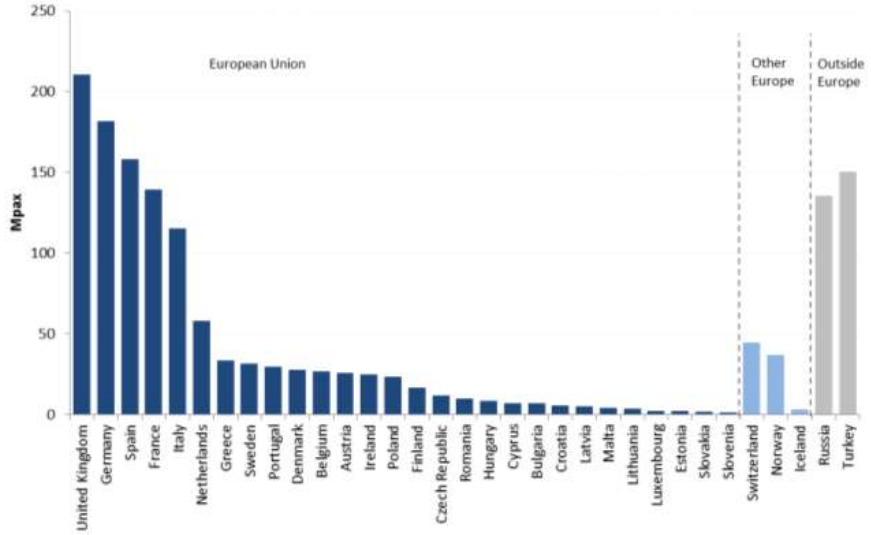
ICAO Member State Airlines RPK Growth by World Region 2013

Region	International		Domestic		Total			
	Traffic Growth % yoy	Market Share %	Traffic Growth % yoy	Market Share %	Traffic Growth % yoy	Market Share %	Capacity Growth (ASKs) %	Load Factors (LFs) %
Africa	7.4	3	4.2	1	7.0	2	5.2	69.6
Asia/Pacific	5.2	27	9.6	37	7.2	31	6.7	77.2
Europe	***3.8***	***38***	***3.7***	***8***	***3.8***	***27***	***2.6***	***79.9***
Middle East	10.9	13	16.1	1	11.2	9	11.5	76.9
North America	2.6	14	1.9	46	2.2	26	1.9	83.0
Latin America/ Caribbean	8.6	4	4.2	7	6.3	5	5.0	76.1
WORLD	5.2	100	5.1	100	5.2	100	4.6	79.1

Source: ICAO

Within the EU, 70% of traffic operates from airports in the five largest countries – the UK, Germany, Spain, France and Italy. Russia and Turkey are also major air travel markets within the broader European region.

European Airport Passenger Traffic Throughput in 2013 by Country

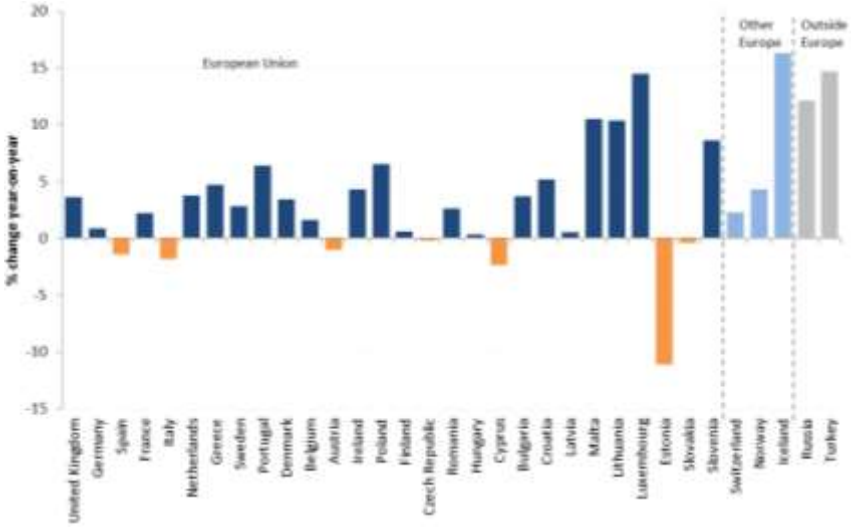


Source: Eurostat (ACI for Turkey and Russia)

Of the Top 5 EU markets, the UK experienced the highest growth at +3.6% in 2013, but UK airport traffic is still 8 million annual passengers (-3.6%) below its 2007 pre-recession peak. Traffic also grew in France (+2.2%) and Germany (+0.9), but dropped in Spain (-1.4%) and Italy (-1.8%) in 2013, reflecting the weak economies in these countries and restructuring of the national carriers.

Traffic growth across the EU28 countries was +1.6% in 2013 (based on Eurostat data), whereas Russia and Turkey experienced +12% and +14% growth respectively, contributing to overall +3.8% growth for the European region.

European Airport Passenger Traffic Growth 2013 v 2012 by Country



Source: Eurostat (ACI for Turkey and Russia)

Worldwide air cargo, measured in terms of Freight Tonne Kilometres (FTKs), grew modestly by +1.4% in 2013, reversing the decline of -1.5% seen in 2012, driven by a general recovery in world trade. Air cargo

continued to decline in the Asia-Pacific and North America regions, but grew rapidly in the Middle East primarily due to +24% growth at Abu Dhabi airport.

European air cargo growth was above the world average at +1.8% in 2013, led by improvements in Frankfurt (+1.4%), Amsterdam (+3.6%) and Leipzig (+3.8%). Air cargo declined at some major airports including Paris-CDG (-3.8%), London Heathrow (-2.6%) and Cologne (-1.8%).

Summary of Air Cargo Traffic growth by Region in 2013 v 2012

	Africa	Asia Pacific	Europe	Latin America	Middle East	North America	Industry
Freight Tonne Kilometres (FTKs) % chg 2013 v 2012	1.0%	-1.0%	1.8%	2.4%	12.8%	-0.4%	1.4%

Source: IATA

The European Business Aviation Association (EBAA) reported a slight decline in business aviation aircraft flights of -0.9% in 2013 across the EU27 states (excluding Croatia).

Air Transport Forecasts

The ICAO Medium Term Forecast 2014 provides forecasts of Passenger Kilometres Performed (PKPs) for each world region. Overall annual growth is expected to be +6.0% in 2014 and increasing to +6.5% by 2016 as economic conditions are generally expected to improve. Fastest growth is expected in the Middle East as the Gulf region hubs continue to increase their share of the global air travel market, followed by developing markets in Asia and Latin America. North America is forecast to continue to grow at only about half of the global rate. Europe (inclusive of Turkey and the Russia) in contrast is expected to grow at 5.4% to 5.9% annually, only slightly below the world average.

ICAO – PKP Annual Growth Rates Forecast

Region of Airline Registration	History		Forecast		
	2012 (%)	2013* (%)	2014 (%)	2015 (%)	2016(%)
Europe	4.8	4.6	5.4	5.7	5.9
Africa	2.2	4.4	4.8	5.9	6.3
Middle East	14.3	11.2	11.6	12.1	12.3
Asia Pacific	6.7	7.7	7.2	7.4	7.5
North America	1.6	2.0	2.7	3.1	3.3
Latin America/Caribbean	9.0	6.7	8.9	8.2	8.6
World	**6.3**	**5.5**	**6.0**	**6.3**	**6.5**

Source: ICAO Medium Term Forecast 2014 *May 2014 Preliminary figures

Long term forecasts are provided by Boeing and Airbus for the global market to 2033, measured in terms of Revenue Passenger Kilometres (RPKs). The forecasts are broadly comparable and use similar methodologies, although the Boeing forecasts predict slightly higher rates of growth. Boeing forecast average growth at +5.0% per annum (2013 – 2033), with Europe growing slower than the world average at +3.9% per annum. Airbus forecasts a slightly more conservative global growth rate of +4.7% per annum (2013 – 2033), but with same European growth rate of +3.9% per annum.

Boeing & Airbus Forecast Comparison

	Boeing	Airbus
RPK (trillion) 2013	5.9	5.5
RPK (trillion) 2033	15.5	13.9
Total Growth 2013 – 2033	163%	151%
Average Annual Growth Rate	**5.0%**	**4.7%**

Source: Boeing, Airbus

EUROCONTROL produces forecasts of growth in IFR[1] flight movements in Europe. Growth is expected to be +2.6% per annum from 2015 to 2020, reaching 11.2 million annual flights in 2020 in the baseline forecast. EUROCONTROL have produced high and low case forecasts with between 10.1 million and 12.1 million flights in 2020. Growth rates are expected to be lower in the mature markets of Western Europe and higher in Eastern Europe and Turkey. In absolute terms, Turkey is expected to contribute the most additional flights by 2020, followed by the large markets of France and Germany.

EUROCONTROL expects airport capacity constraints to limit growth, predicting that demand for 144,500 annual flights will not be accommodated by 2020, dampening growth by a total of 1.3%. Air travel demand is also reduced by an equivalent of 51,000 annual flights by 2020 due to expected substitution of short haul air travel by high speed rail.

Airlines

Global airline profitability improved markedly in 2013 compared with 2012. IATA reported that operating profits increased from US$12.1 billion to US$20.3 billion (+68%) and net profits increased from US$6.1 billion to US$10.6 billion (+74%). Margins improved in 2013 but remain slim – global average operating margins were 2.9% and net margins were 1.5%. Return on invested capital for airlines worldwide was 4.4% in 2013, up from 3.7% in 2012.

The improvement in performance was driven by North American airlines as they benefited from industry consolidation and improved cost bases following restructuring under Chapter 11 bankruptcy protection. Latin American airlines returned to profit in 2013 after making net losses in 2012. Africa was the only region where airlines as a whole were loss making.

Profitability of European airlines was slightly improved in 2013, although operating margins (measured in terms of Earnings Before Interest and Tax – EBIT) remained unchanged, and low, at just 0.7%.

[1] Instrument Flight Rules, i.e., flights required to file flight plans with EUROCONTROL

Airline Financial Results by Region

Region	2012	2013
Africa		
Net post-tax profit, $billion	-0.1	-0.1
EBIT margin, % revenue	-0.4%	-0.5%
Asia-Pacific		
Net post-tax profit, $billion	2.7	2.0
EBIT margin, % revenue	1.9%	2.8%
Middle East		
Net post-tax profit, $billion	1.0	1.0
EBIT margin, % revenue	3.0%	2.6%
Latin America		
Net post-tax profit, $billion	-0.2	0.2
EBIT margin, % revenue	1.5%	2.2%
North America		
Net post-tax profit, $billion	2.3	7.0
EBIT margin, % revenue	3.4%	5.3%
Europe		
Net post-tax profit, $billion	0.4	0.5
EBIT margin, % revenue	0.7%	0.7%

Source: IATA Fact Sheet June 2014, accessed at www.iata.org

The cost of jet fuel averaged US$124.5 in 2013, down slightly from US$129.6 in 2012 and with less volatility than in previous years.

There was downward pressure on yields during 2013, with IATA reporting that passenger yields were down -0.2% and cargo yields were down -4.9%. The improvements in airline profitability arose from effective cost controls.

ASK capacity growth of the world's Top 25 airlines averaged +3.9% in 2013. High growth was recorded by Turkish Airlines (+21.1%), Aeroflot (+17.8%), Etihad (+16.4%), Emirates (+14.6%) and China Eastern (+11.2%). The major European airlines recorded below-average growth: KLM (+3.0%), British Airways (+2.0%), Lufthansa (+1.0%) and Air France (-0.8%). Overall ASK capacity growth of AEA member airlines (representing mostly legacy European airlines) was just 0.1%, although RPKs performed grew by +1.3% due to higher load factors.

Europe's Top 15 Low Cost Carriers (LCCs) grew ASK capacity by +8.7% in 2013. Ryanair and easyJet grew capacity by +5.4% and +6.3% respectively, while Air Berlin cut capacity by -5.1%. The fastest growing LCCs were Norwegian (+35.2%), Pegasus (+22.6%) and Vueling (+21.8%).

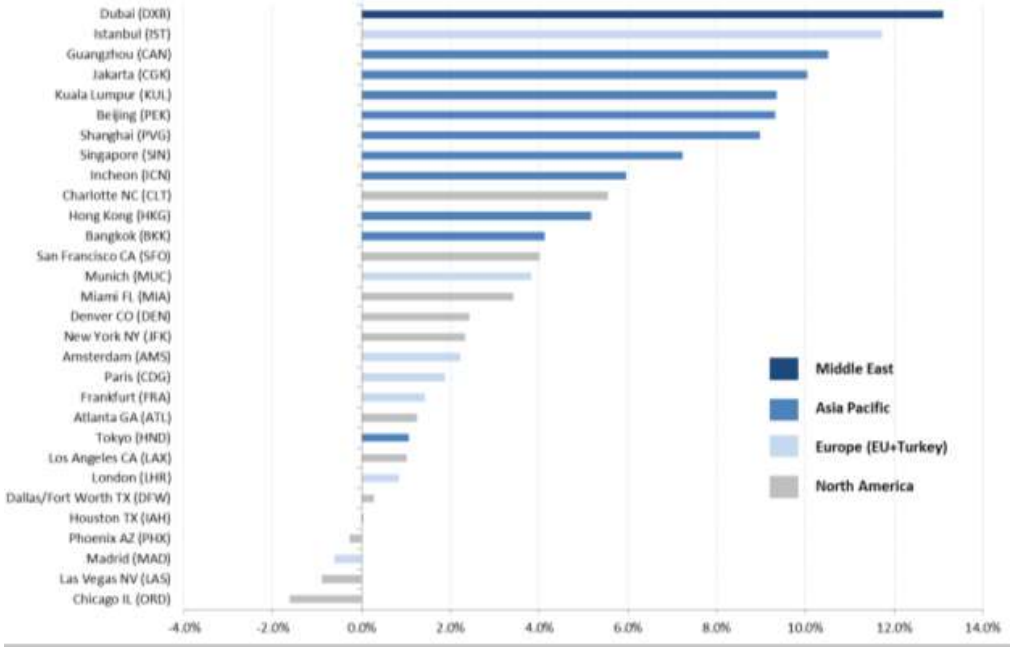
Outside of Europe, the Top 25 LCCs in the Rest of the World grew ASK capacity by +9.0% in 2013, driven by the rapid growth of LCCs in India, South East Asia and Latin America, as well as flyDubai.

Traffic for Europe's major Charter airlines, measured in RPKs, declined by an average of -2.3% in 2013, with mixed individual performance from Thomson Airways (-1.6%), Thomas Cook (-11.2%), Condor (+3.6%), Monarch (+2.9%) and SunExpress (-6.0%). This largely reflects growing competition from LCCs and exposure to the downturn in North African traffic due to the Arab Spring.

Airports

Growth of global airport traffic has been led by Asian and Middle East airports in recent years. European and North American airports have grown modestly or declined (notably Madrid and Chicago airports).

Top 30 Global Airports – Passenger Compound Annual Growth Rate 2005-2013



Source: ACI and Flightglobal for the airports that were not in top 30 in 2005

Europe's major airport passenger throughput generally grew in 2013: London Heathrow (+3%), Paris-CDG (+1%), Frankfurt (+1%) and Amsterdam (+3%). This was offset by continued declines in passenger traffic at Madrid (-14%) and Rome Fiumicino (-2%). The Istanbul airports grew strongly, with Istanbul Ataturk airport growing by +12% and Istanbul Sabiha Gokcen airport growing by +22% due to expansion by both Turkish Airlines and Pegasus. The Middle Eastern airports of Doha and Abu Dhabi grew both by +14% with total passenger numbers at 23million and 16million in 2013. This was performance was driven by their respective carriers of Qatar (Doha) and Etihad (Abu Dhabi) which have experienced strong passenger growth over the time period.

According to the ACI Economics Report 2013, based on a survey response from about 680 airports that collectively handled 4 billion terminal passengers or 70% of global traffic[2], worldwide total airport revenues

[2] Airport terminal passengers differ from the number of passengers carries by airlines, in that at airport level an individual passenger will be counted twice, at both the departing and arriving airport

in 2012/13 grew by +8.1% to US$117 billion, split 56%/44% between aeronautical and non-aeronautical revenues.

For the European airports providing data to ACI, total airport revenues in 2012/13 grew by +5.4% to US$44.3 billion. Aeronautical revenues grew by +3.2% to US$26.1 billion (58% of total revenue), while non-aeronautical revenues grew more quickly, by +8.6% to US$18.2 billion (42% of total revenue).

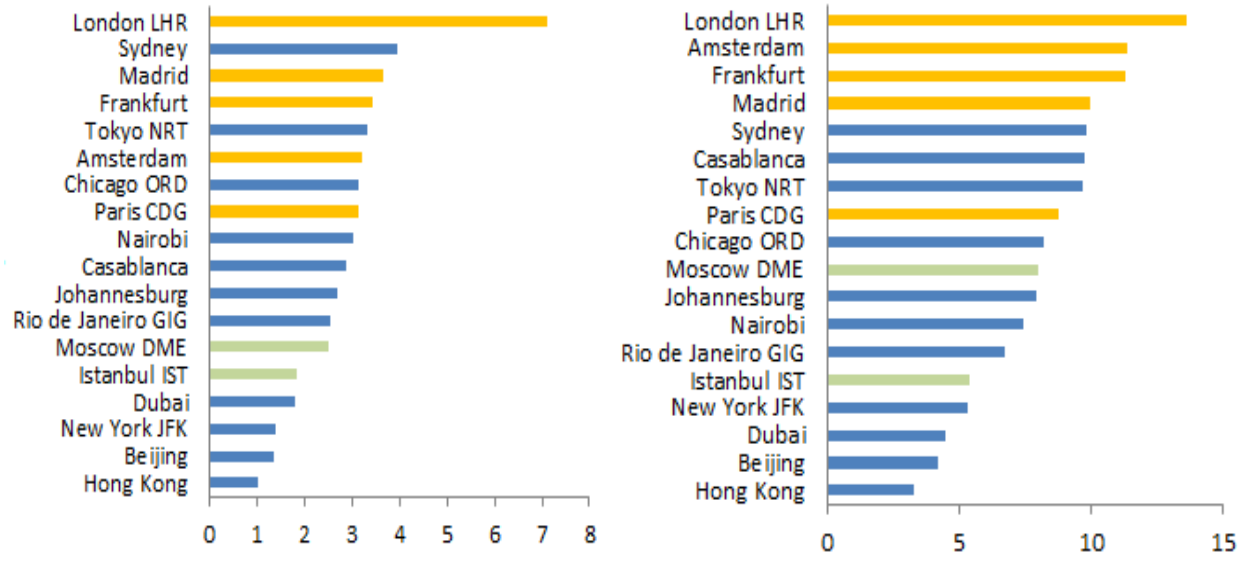
All of the major European airport groups were profitable in 2013. Most reported increased profits, with the exception of Aeroports de Paris, Aeroporti di Roma and Copenhagen Airport which saw reductions in net profitability.

During 2013 there was continued investment in improved airport infrastructure both in Europe and worldwide, as well as changes in airport ownership. These are summarised in the main report.

The levels of airport charges at a selection of airports show that charges at European airports are generally higher than other airports worldwide. According to RDC Aviation / airportcharges.com, London Heathrow has the highest charges, and these increased by +37% for a typical Boeing 737-800 turnaround and +28% for a Boeing 747-400 turnaround in 2013, compared with 2012. Conversely, charges at Paris-CDG decreased by -25% (B737) and -21% (B747) in 2013. Heathrow charges are particularly high for the operation of smaller aircraft types due to a charging structure which reflects the scarcity of Heathrow slots and seeks to encourage the use of larger aircraft.

2013 Total Airport Charges (in thousands GBP) at Selected Airports

Charges for the turnaround of a typical Boeing 737-800 (left) or Boeing 747-400 (right) Aircraft



Source: RDC Aviation/airportcharges.com (Orange: European Union airports, Green: other European airports, Blue: World airports)

Aircraft Manufacturing and MRO

The European Aerospace & Defence industry had a turnover €197.9 billion in 2013, up +5.6% on 2012 and representing 39.8% of the global market. The industry employed 561,400 people. Europe's Aerospace &

Defence industry is the second largest in terms of both turnover and employment behind the United States. The European aeronautic sector (civil and military aeronautics, excluding space activities and land & naval defence) grew by +8% in 2013 to reach €138.5 billion turnover, and has grown at +6.1% CAGR since 2008.

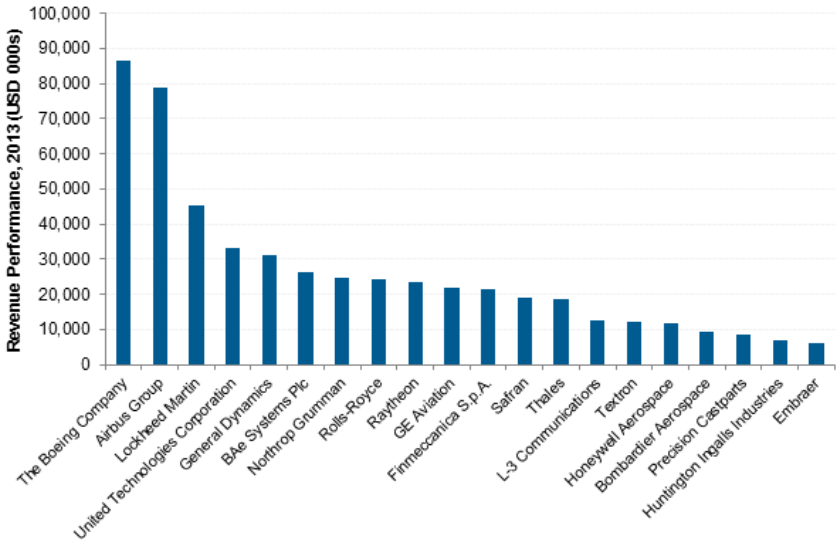
Comparative Aerospace & Defence Turnover and Employment, 2013

Region	Turnover (€ bn)	Percentage of world aerospace turnover	Employment	Percentage of world aerospace employment
United States	232.1	46.8	620,500	34.2
Europe	197.9	39.8	561,400	30.9
Canada	25.1	5.1	172,000	9.5
Japan	17.8	3.6	35,411	2.0
Russian Federation	16.6	3.3	399,761	22.0
Brazil	6.9	1.4	25,614	1.4

Source: Aerospace and Defence Industries Association of Europe (ASD)

The world's Top 20 aerospace companies are dominated by US and European companies. Total turnover of the Top 20 was US$506 billion in 2013, with EU-headquartered companies totalling US$176 billion turnover (34.8% market share)

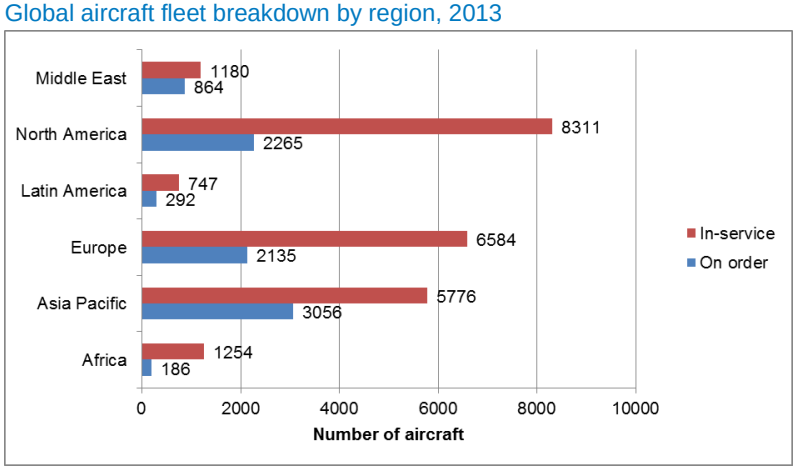
Top 20 Global Aerospace Companies by Revenue, 2013



Source: Deloitte

In 2013 there were 27,661 aircraft in service and 12,344 on order. Boeing aircraft types account for 34% of aircraft in service, and Airbus types account for 26% of the world fleet. During 2013 Airbus delivered 626 aircraft and secured orders for 1619 aircraft. Boeing delivered 648 aircraft and secured orders for 1531 aircraft. A breakdown of the global aircraft fleet by world region is provided below.

Global aircraft fleet breakdown by region, 2013



Source: CAPA Fleets Database

The Maintenance, repair and Overhaul (MRO) sector had a global value of US$60.7 billion in 2013, up +5.5% on 2012. The European share of MRO activity was 26%, just behind Asia Pacific at 27% and North America at 31%. According to TeamSIA forecasts, the global MRO market is forecast to grow +50% by 2024 (+4.2% CAGR). The European MRO market is forecast to grow at +2.9% CAGR to 2024, by which time the European share of the market will have slipped to 25%, while the Asia Pacific share is expected to increase to 34%.

Air Traffic Management

Air Navigation Service (ANS) performance targets are set under the Single European Sky Performance which is organised in Reference Periods. The first Reference Period (RP1) ran for three years from 2012 to 2014, while RP2 will run for 5 years from 2015 to 2019. SES States and Air Navigation Service Providers (ANSPs) have moved away from the full recovery charging mechanism and adopted the "determined costs" method with specific risk-sharing arrangements aimed at incentivising ANSPs' economic performance. Traffic in 2013 (measured in Service Units) was 5.6% lower than planned in the National Performance Plans (NPPs), but costs were 5.4% lower, so the EU-wide actual real en-route unit cost per service unit in 2013 was €56.85, just 0.3% higher than the forecast adopted in the NPPs.

In terms of safety, the number of ANS related accidents has remained low and stable over the ten-year period (2003-2012), while the number of accidents with an ANS contribution has decreased. In 2011 and 2012 there were no accidents with an ANS contribution.

Although all Member States remain committed to the SES, implementation (particularly in terms of the development of Functional Airspace Blocks) still falls well below original expectations. In June 2013, the Commission proposed updates to the four regulations creating the SES and also amendments to the rules governing the European Aviation Safety Agency (EASA). These proposals are known as SES2+ and provide a framework for a more performance based approach to delivering the objectives of the Single

European Sky, particularly with reference to implementing Functional Airspace Blocks (FABs) and reinforcing the role of the Network Manager.

In terms of technical developments, in May 2013, the European Commission adopted Implementing Regulation (EU) 409/2013 that defines an EU framework that will activate the SESAR deployment process, closing the loop of the project's definition-development-deployment life cycle in order to allow SESAR to fully deliver expected benefits from concept to implementation.

Competition Issues

Mergers – Acquisitions and State Aid Cases

In terms of regulatory and case-law development in the EU, the USA and other countries, the following developments occurred in 2013:

In Q2 2013, the Commission adopted a commitment decision making legally binding the commitments offered by members of the 'Atlantic Plus Plus' joint venture ("A++"), thus accepting commitments offered by Lufthansa, Air Canada and United to address the Commission's concerns that the parties' cooperation under a revenue-sharing joint venture may be in breach of EU antitrust rules and harm premium passengers on the Frankfurt-New York route.

Also in 2013, the Commission examined five merger and acquisition cases, three of which were approved, whilst the remaining two were blocked.

The Commission's examination concluded that the UPS / TNT Express (Case M.6570) would have restricted competition in 15 Member States between 2 (UPS and DHL) rather than 3 providers. The Commission prohibited Ryanair's acquisition of Aer Lingus for the third time due to concerns over the creation of a monopoly or a dominant position on 46 routes, reduced consumers' choice, and potential price increase for consumers travelling on these routes. The Commission did not accept Ryanair's suggested remedies (e.g. divestiture of Aer Lingus' operations on 43 overlap routes to Flybe, sale of take-off and landing slots to British Airways at London airports, and/or additional slot divestitures on London-Ireland routes).

The merger of US Airways / American Airlines (case m.6607) was cleared by the Commission, conditional upon the release of one daily London Heathrow slot pair to a competitor on the London-Philadelphia route. The merger of Aegean Airlines / Olympic Air (Case M.6796) was cleared on the basis that Olympic was a "failing firm". In Delta Air Lines / Virgin Group / Virgin Atlantic Limited (Case M.6828), the Commission cleared the acquisition of a 49% stake in Virgin Atlantic by Delta Air Lines without conditions due to the continued strong competition provided by AA, BA and United on transatlantic routes out of London.

Due to the precarious financial situation of many flag carriers, particularly in Central, Eastern and South-Eastern Europe (CESE), several cases of approval of State aids were filed in 2013. The underlying reason for this increase in State aid investigations against airlines are the difficulties facing carriers in the region in developing sustainable business models due to limited investment possibilities, strong competitors, and divergent interests of the airlines and their governments. The main report provides an overview of the important investigations of Malév, CSA, LOT, airBaltic, Cyprus Airways, Estonian Air and SAS. In addition,

the approximately 70 ongoing State aid investigations in the aviation sector relating to State aid to airports and start-up aid to airlines is also examined.

Euro-Mediterranean Aviation Agreements

During summer 2013, the EU and Israel signed a comprehensive air transport agreement which will gradually open up and integrate their respective aviation markets whilst integrating Israel into a wider Common Aviation Area with the EU, based on common rules and Israel having agreed to adopt regulations similar to the ones in force in the EU in the areas such as aviation safety, environment, consumer protection, air traffic management and social aspects. Following the agreement there was a significant increase in the frequencies operated by airlines between the EU and Israel.

Significant Market Developments – Ownership, Control & Privatisation

During the Thirteenth Meeting of the US-EU Joint Committee the European delegation suggested that the Transatlantic Trade and Investment Partnership (TTIP) negotiations initiated in July 2013 could be seen as an opportunity to reform the EU and US air carriers' investment regimes, and to reinforce efforts on regulatory harmonisation. However, the US delegation refused to discuss the subject, as at the time there was an on-going 90-day consultation period with Congress and stakeholders.

In 2013, the minority acquisition of Korean Air into CSA, the minority acquisitions of Etihad into several European airlines, and Delta's minority acquisition of Virgin Atlantic gave rise to the discussion about effective control. These are strategic investments by airlines seeking to generate benefits from network integration. However, "effective control" must remain in the hands of legal or natural European persons. Assurances must be sought that in all cases involving acquisition of minority shares of European airlines, compliance with Regulation 1008/2008 is ensured.

With regards to privatisations in 2013, the sale of TAP was still on-going with the Portuguese government waiting for new bidders until market conditions for a potential sale improve. The Polish government passed a regulation to enable the privatisation of LOT. On a similar note, the Slovenian government is planning to privatise Aerodrom Ljubljana and the flag carrier Adria Airways. Kuwait Airways continued its long road to privatization after the law for the privatisation of Kuwait Airways Corporation was passed in early 2013.

Environment

Aircraft Noise

Aircraft noise remains the biggest issue affecting people living around airports. Airports need to demonstrate to regulators that they are "good neighbours" where airport expansion is an ambition. Although technological and operational improvements continue, the rates of growth in air traffic present ongoing challenges to maintaining environmental performance and safety.

In the UK, airlines, airports, manufacturers and air navigation service providers are working together to reduce noise before operational restrictions should be considered. This was initiated in 2013 through the Noise Road Map, focusing on four key areas:

- Aircraft and engine technology and design improvements – although aircraft are now 75% quieter than 50 years ago due to technology improvements, further reductions may be achieved by 2050 through the development of blended-wing aircraft and engine design improvements;
- Operational improvements through the implementation of aircraft and airspace techniques offer a range of noise reductions between 1dB and 5dB;
- Land use planning guidelines and the risks that these entail for people living within noise sensitive areas around airports;
- Improvements in noise communication and community engagement.

Another noise initiative launched in Europe in 2013 is the FRAConnect scheme, where airlines operating to Frankfurt airport will receive retroactive reductions in airport charges in 2014 and 2015 if they achieve passenger growth of more than one percent per year on international routes and deploy advanced and low-noise aircraft to achieve that growth.

Emissions Trading - Aviation

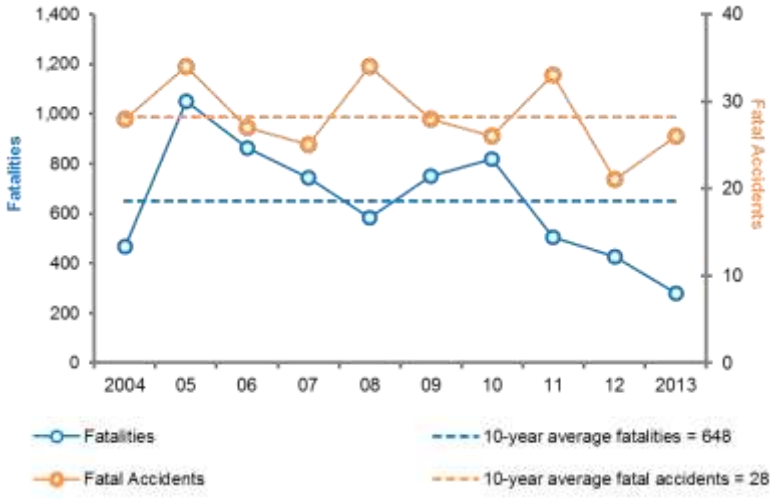
In 2012 the European Commission decided to “stop the clock” on implementing international aspects of ETS for aviation to allow time for the ICAO negotiations towards agreeing an international solution for aviation emissions. In October 2013, the ICAO Assembly committed to develop a global market-based mechanism addressing international aviation emissions by 2016 and implement it by 2020. This allowed the Commission to propose amendments to the aviation EU ETS Directive, for the period 2013-2016, including proposals for emissions obligations on flights between airports in the EEA, exemptions and the introduction of an allowance cycle.

Security and Safety

Safety

In 2013, 26 fatal commercial accidents were reported worldwide causing a total of 281 fatalities. This was the lowest number of annual fatalities on record, and 40% lower than in 2012 which was itself a record low year. The trend over the last 10 years in absolute terms is shown in the chart below.

World Commercial Airline Fatal Accidents and fatalities 2004-2013



Source: Mott MacDonald, Flight International based on Ascend/Flight Global, for aircraft over 5700kg.

Aviation Security

In December 2013, IATA and ACI signed a Memorandum of Understanding to jointly develop 'Smart Security', a risk-based approach with the objectives of strengthened security, increased operational efficiency, and improved passenger experience.

During 2013 the EU amended Regulation 185/2010 dealing with restrictions on the carriage of Liquids, Aerosols and Gels (LAGs). It sets out a phased approach to lifting the restrictions through the implementation of Liquid Explosive Detection Systems (LEDS) at airport screening points. Phase 1 implemented by January 2014 made mandatory airport screening with LEDS for at least LAGs in STEBs (security tamper evident bags) purchased at airports and any liquid medicine or special dietary needs. The operational impact of this first phase will be closely monitored and evaluated and if successful will lead to further legislative amendment preparing the second phase. The goal is a complete lifting of the ban by screening all LAGs as of January 2016.

Consumer Rights – Air Passengers

Passenger Compensation

Interpretation of Regulation (EC) 261/2004 on passenger compensation has been developed by CJEU rulings. The Sturgeon judgment (2009) suggests that although there is not explicit right to fixed-rate compensation for passengers whose flights are delayed, the Regulation should be interpreted consistently with the principle in EU law of equal treatment. The Nelson judgement (2012) reinforces that passengers with delays of three hours or more would be entitled to the same right to compensation as passengers whose flights had been cancelled.

There are inconsistencies in the application of passenger compensation following these court rulings as individual member states are free to regulate how far back a claim can be made by consumers. There are also issues regarding the interpretation of 'extraordinary circumstances', under which airlines are not liable to pay passenger compensation.

Airline Insolvency – Standalone Tickets

In March 2013, the Commission issued a communication relating to air passenger protection in the event of airline insolvency. The Commission encouraged the adoption of measures to strengthen licencing oversight of EU carriers under Regulation (EC) 1008/2008, covering:

- the monitoring of the financial position of air carriers;
- best practice and information sharing between the regulatory authorities of member states;
- the formalisation and promotion of existing voluntary agreements on rescue fares;
- the wider and more systematic availability of SAFI or similar insurance products across the EU;
- the adoption of a service level agreement;
- the availability of information about credit card refund schemes or similar products in a member state to allow passengers to protect themselves against the risk of insolvency under national law

1. Air Traffic Trends

1.1 Introduction

This chapter on air traffic trends has two central aims, intending to deliver:

- The highlights of 2013 in terms of air traffic developments and provide a broad high-level overview of the impacts of key events during the year
- The foundation for the remainder of the report, introducing certain trends, issues and themes which will be assessed and analysed in greater detail and definition in succeeding chapters.

Because of the global nature of the air transport industry, developments in one geographical region can have far-reaching implications in others. In respect of this dynamic, the objective of this section will be to analyse the key air traffic developments and events of 2013 by world region and further analysis at an airport and airline level, placing them into a global context and paying particular attention to the impact on the European air transport market.

Commercial air traffic is a broad term, but for the purposes of this section it is defined as including and being limited to:

- Air passengers
- Air transport movements
- Air cargo

A variety of industry sources, using different 'cuts' of air traffic data has been used in this section to elicit trends. From the airport perspective, air passenger throughput, air transport movement figures and air cargo tonnage data are drawn upon. Airline traffic data in the form of Revenue passenger kilometres (RPK) and Freight tonne kilometres (FTK) will also be used in analyses. It is important to note at the outset that airport and airline traffic data may not necessarily correspond with each other due to the different sources used. When compiling air traffic statistics on an aggregate level, be it passengers by geographical region or air cargo tonnes uplifted by airline alliance, the base data is either airport passenger throughput or airline passenger uplift – a straight comparison will not produce an exact match. Also, some bases reflect memberships versus full industry performances and therefore differences can be notified.

For example, total European Union air passenger traffic can be calculated by aggregating Member States' airport throughput, but also by aggregating Member States' airline passenger uplift – the two results will vary due to the reasons explained above. As far as is practicable, this section will endeavour to compare datasets of the same origin (on a like for like basis).

1.2 Overview of 2013

Overall 2013 was the fourth consecutive year of air travel demand growth at airports across the world regions as illustrated in Table 1.1.

The International Civil Aviation Organisation (ICAO) stated airlines of its 191 member states handled 3.1 billion passengers in 2013, a +4.5% year-on-year increase on 2012.

Airports Council International (ACI) reported that 6.3 billion passengers[3] passed through its 1,989 member airports (157 countries worldwide), an increase of +9.7% over the previous year, reaffirming the recovery of the aviation industry.

Table 1.1: 2013 Worldwide Airport Traffic Summary

	Passenger throughput (m)			ATMs (m)			Cargo tonnes (m)		
Region	**2012**	**2013**	**% chg**	**2012**	**2013**	**% chg**	**2012**	**2013**	**% chg**
Africa	163.5	165.3	1.1	1.9	1.9	0.3%	1.8	1.8	-1.1%
Asia Pacific	1,709.7	2060.1	20.5	9.6	10.2	6.5%	34.2	33.7	-1.6%
Europe	1,615.9	1730.1	7.1	11.5	11.5	-0.1%	17.8	16.8	-5.8%
Latin America	444.4	501.2	12.8	4.9	5.0	0.2%	5.0	4.9	-2.9%
Middle East	253.8	278.5	9.7	1.2	1.3	5.2%	5.9	6.3	6.5%
North America	1,562.3	1570.4	0.5	18.9	18.7	-0.7%	28.3	26.9	-5.1%
ACI Total	**5,749.6**	**6,305.5**	**9.7**	**48.0**	**48.6**	**1.2%**	**93.0**	**90.2**	**-3.0%**

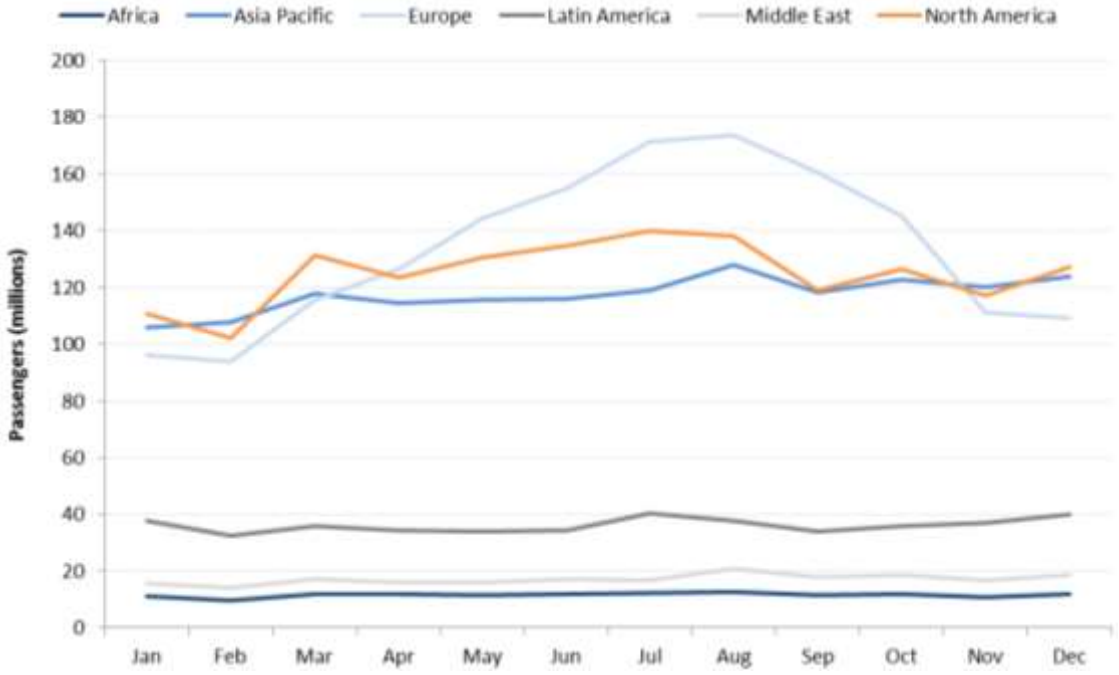
Source: ACI Worldwide Airport Traffic Report

While many major economies still remain in a fragile state, air travel demand in 2013 grew, mainly in the second half as the world trade volumes gained steam. On the whole, passenger traffic persisted robustly despite the global uncertainties and downside risks. While international markets remained strong through 2013, domestic markets suffered for Europe and North America's weak market growths. Figure 1.1 and Figure 1.2 plot 2013 airport passenger throughput and growth by month, by world region.

In Figure 1.1, the seasonality profile is more pronounced for European air traffic demand, highlighting the significant peak in leisure air travel during the European summer months, more so than in any other region.

[3] Total Passenger figures refers to 'Terminal' plus 'Transit' Passengers as identified by ACI. A portion of airports do not report purely Terminal passengers but do report Total passengers (Terminal + Transit), so Total Passengers are used in this analysis.

Figure 1.1: Monthly 2013 Air Passenger Throughput at all ACI Reporting Airports

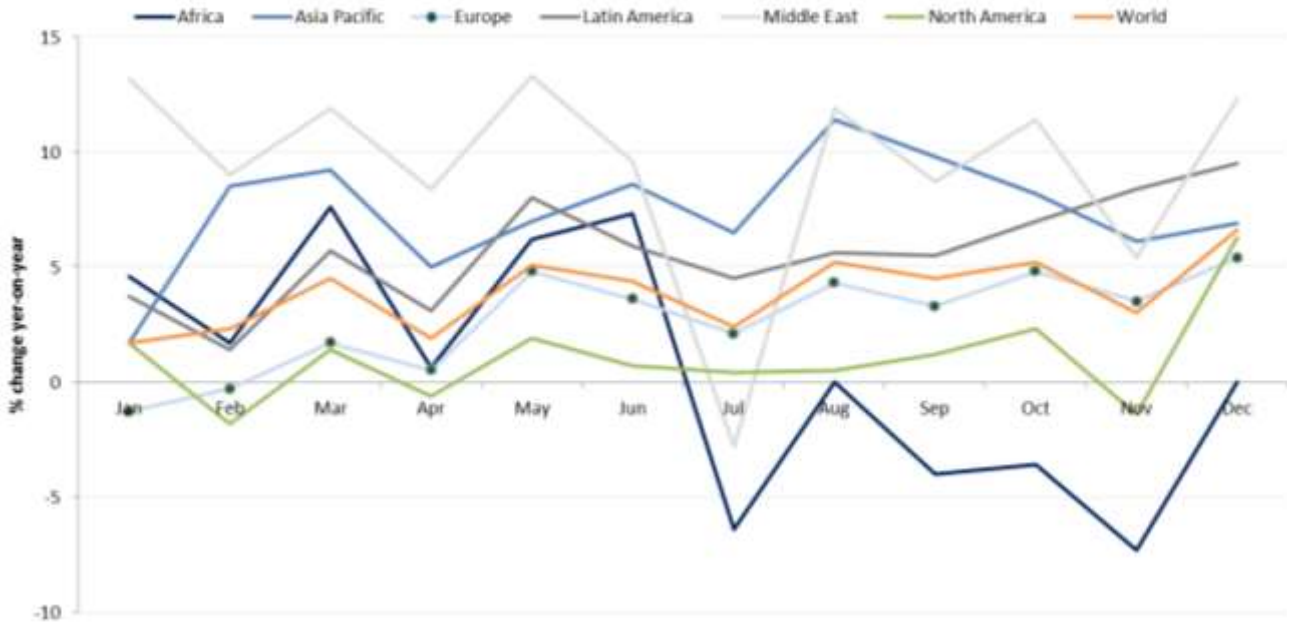


Source: ACI Monthly Worldwide Airport Traffic Reports, January-December 2013

Figure 1.2, following, illustrates year-on-year growth by month of 2013, by global region. When considering general trends in air travel demand, 2013 continues the pattern seen in previous years of European and North American growth lagging that of the Middle East, Asia Pacific and Latin America. Africa's growth was impacted by Egypt's crisis in the third quarter of 2013 and the Arab Spring, characterized by a wave of civil unrest. Asia Pacific's air traffic is strongly attributed to China and Japan grew as they account for over 50% of the total air traffic in the region. Europe suffered its largest 2013 downturn in July due to UEFA Euro and Olympic Games in 2012.

In North America, lower than expected business and consumer confidence hit air travel demand, remaining almost stable since 2011 along with a continued discipline by US carriers in capacity expansion. Meanwhile, in Europe the unstable economy did not trigger any adverse effect in air traffic demand throughout the year, having almost a full year of positive monthly growth.

Figure 1.2: Monthly 2013 Airport Passenger Throughput Growth Rates



Source: ACI Monthly Worldwide Airport Traffic Reports, January-December 2013

The International Civil Aviation Organisation (ICAO) stated airlines of its 191 member states handled 3.1 billion passengers in 2013, a +4.5% year-on-year increase on 2012.

According to ICAO preliminary 2013 numbers, total scheduled air passenger traffic (measured in revenue passenger-kilometres [RKPs]) increased by +5.2% overall in 2013, which represents the fourth consecutive positive growth since 2009 (+4.9% year-on-year 2012 over 2011). ICAO attributes the recent upswing to positive economic results globally and improved business and consumer confidence during 2013 in several major economies. This has been achieved despite emerging economies grew at a lower rate than expected.

The largest percentage growth in total air traffic was registered by the airlines of the Middle East with +11.2%, followed by those of Asia Pacific (+7.0%) and Africa (+7.0%).

Table 1.2: ICAO Member State Airlines RPK Growth by World Region 2013

Region	International		Domestic		Total			
	Traffic Growth % yoy	Market Share %	Traffic Growth % yoy	Market Share %	Traffic Growth % yoy	Market Share %	Capacity Growth (ASKs) %	Load Factors (LFs) %
Africa	7.4	3	4.2	1	7.0	2	5.2	69.6
Asia/Pacific	5.2	27	9.6	37	7.2	31	6.7	77.2
Europe	***3.8***	***38***	***3.7***	***8***	***3.8***	***27***	***2.6***	***79.9***
Middle East	10.9	13	16.1	1	11.2	9	11.5	76.9
North America	2.6	14	1.9	46	2.2	26	1.9	83.0
Latin America/ Caribbean	8.6	4	4.2	7	6.3	5	5.0	76.1
WORLD	5.2	100	5.1	100	5.2	100	4.6	79.1

Source: ICAO (preliminary figures)

International traffic (+5.2%) grew at a similar rate as domestic traffic (+5.1%). The largest international market is Europe (38% share of total International RPKs), followed by Asia Pacific (with 27% share). In 2013, Asia Pacific's international air traffic outgrew Europe compared to 2012 and its domestic air traffic continues with a constant steady growth (+9.6%). Europe's domestic growth recovered from -0.7% in 2012 to +3.7%, albeit the size of the market is relatively small (8% share) compared to others. Despite Asia Pacific's domestic air traffic tremendous growth, North America still accounts for the largest domestic air traffic market (46% of the global market share), even though it suffered a 3% loss of the global market share. The fast-growing domestic market in Asia Pacific will soon overtake North America, mainly driven by China, as its domestic traffic accounts for approximately 60% of the region's total traffic.

Middle East international air traffic pace of growth slowed down but continues to be the fastest growing market worldwide (+10.9%). Its domestic market year-on-year growth doubled in 2012-13 compared to 2011-12; however its global market share is 1%. On the other hand, North America's market growth was once again the lowest, despite doubling growth compared to 2012 (+2.6% international and +1.9% domestic). Although RPK growth was low (+2.2%), capacity growth was even lower (+1.9%), reflected in the highest Load Factors (83.0%) of any region in 2013.

Africa and Latin America/Caribbean are still small markets (2% and 5% market share respectively), but their international market growth outstands all regions except Middle East.

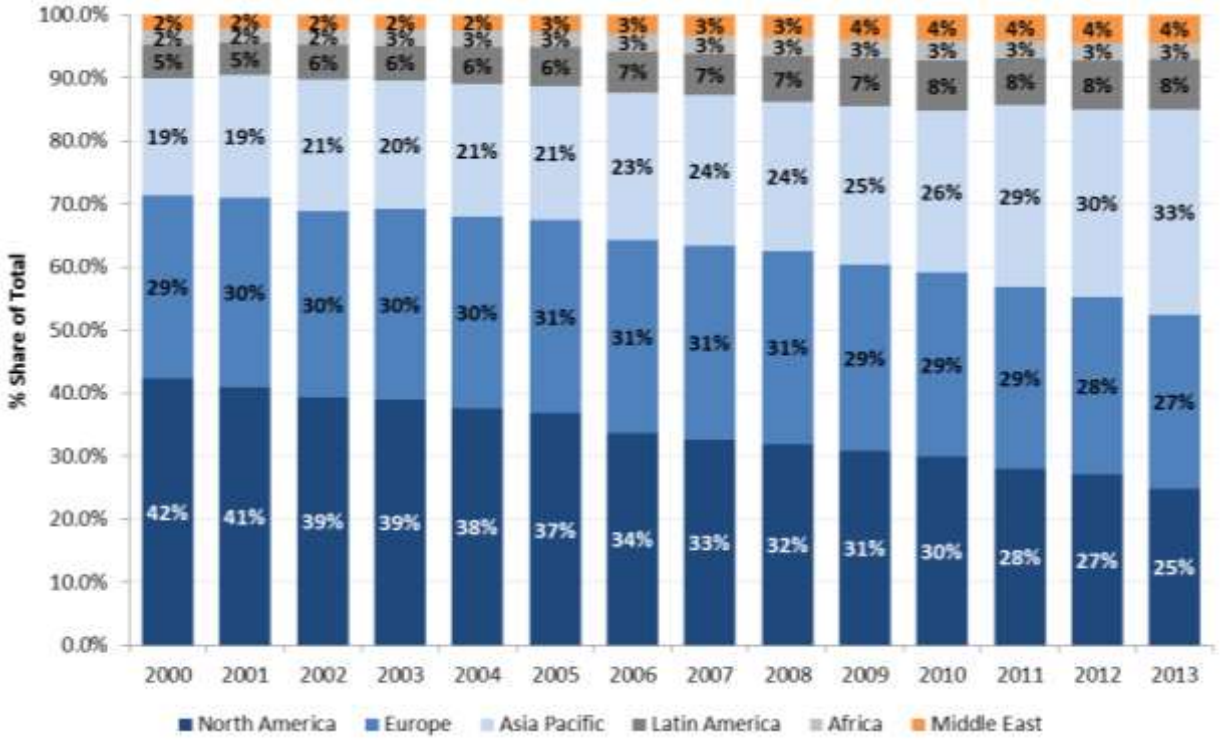
1.2.1 Historic Air Passenger Traffic Trends

Figure 1.3 below illustrates the relative growth or decline in airport passenger throughput market share, by global region, between 2000 and 2013. From the graphic it is immediately apparent that over the last decade there has been a demonstrable shift in growth from the regional perspective.

By analysing global airport passenger traffic data from ACI, we can observe that at the beginning of the previous decade, North America's airports commanded the greatest market share of passengers, reflecting both the pre-eminence of its domestic market and also the extent and development of its international network. The European market was a clear second, some distance behind North America but also significantly ahead of Asia Pacific, which, at this stage, was a relatively unformed market yet to unlock its full potential.

Fast forward thirteen years to 2013 and the landscape has changed as Asia Pacific, dominant by vast, rapidly growing domestic markets in China, India and Indonesia, has transformed the region on the global stage. In 2013, the trend continues and it is forecasted to continue with the same profile if the regional GDP is considered. Asia Pacific now accounts for one in three of global passengers.

Figure 1.3: Evolution of Global Airport Passenger Throughput 2000-2013

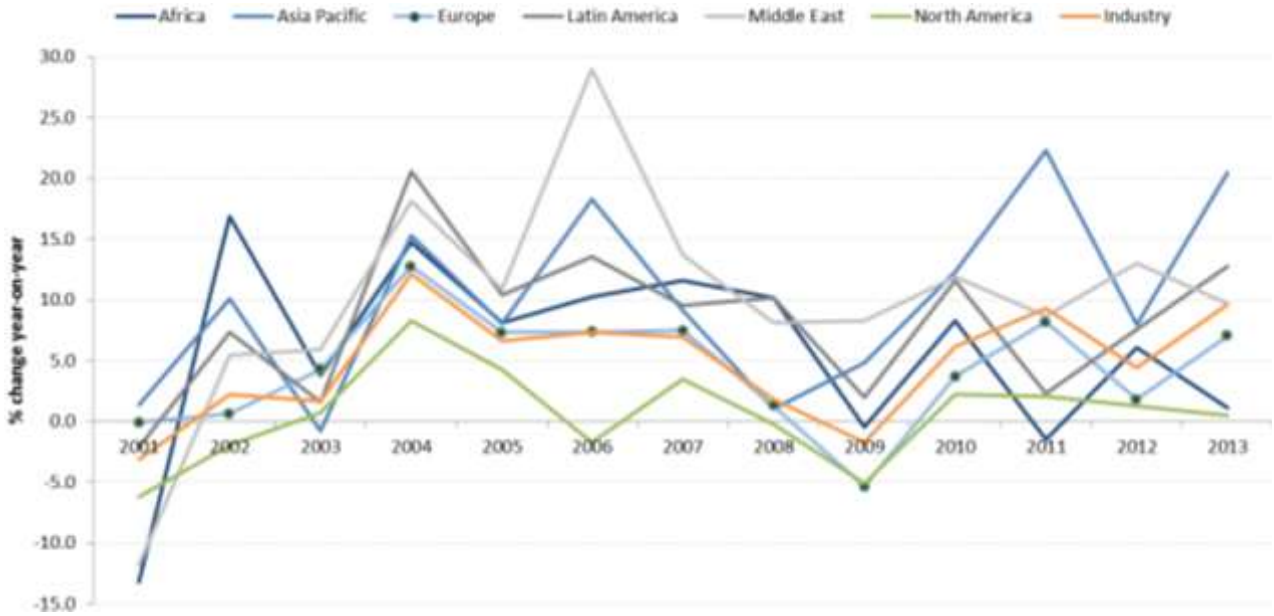


Source: ACI Worldwide Airport Traffic Report

Placing 2013 air passenger traffic year-on year growth in a historical context we can see that over the course of the last decade the underlying trend has been one of positive growth, albeit fairly erratic due to a variety of external 'shock' events. The industry declines experienced in 2003, 2009 and 2011 (mainly attributable to the SARS epidemic, global economic downturn and 'Arab Spring', respectively) remind us that air travel demand is explicitly vulnerable to exogenous events.

Equally evident is the resilience of the industry in 'bouncing back' after these shocks – note the sharp increase in overall growth in 2004 and 2010, in particular, following the shocks of the preceding years.

Figure 1.4: Airport Passenger Throughput Growth at ACI Reporting Airports 2001-2013



Source: ACI Worldwide Airport Traffic Report

1.2.2 Economic Growth & GDP

Economic growth is recognised as being the key driver for air traffic demand growth, passenger travel and air cargo.

The International Monetary Fund (IMF) records economic growth, measured in Gross Domestic Product (GDP), for individual nations and various geographical/political groupings. The groupings shown in Table 1.3 below represent a broad cross-section of the world. In a European context, sub-regions have been broken out and analysed individually, to identify differences in growth within the continent.

In addition, a distinction is made between advanced and emerging economies in order to reflect where the highest economic growth is focused in a particular region. With regions as vast and contrasting as Europe and Asia, for example, it is essential to segment the broad market into sub-markets as differences in growth will exist within them.

Table 1.3: GDP % Growth Rates for Regional Groupings – Actual & Forecast

	Actual		Forecast					
Country Group Name	2012	2013	2014	2015	2016	2017	2018	2019
Euro area	-0.7	-0.5	1.2	1.5	1.5	1.5	1.5	1.5
European Union	-0.3	0.2	1.6	1.8	1.9	1.9	1.9	1.9
Advanced economies	1.4	1.3	2.2	2.3	2.4	2.4	2.3	2.1
Emerging and developing Europe	1.4	2.8	2.4	2.9	3.2	3.3	3.4	3.4
Commonwealth of Independent States	3.4	2.1	2.3	3.1	3.2	3.1	3.1	3.2
Major advanced economies (G7)	1.7	1.4	2.2	2.3	2.3	2.3	2.1	1.9
Middle East and North Africa	4.1	2.2	3.2	4.5	4.7	4.4	4.5	4.4

	Actual		Forecast					
Country Group Name	2012	2013	2014	2015	2016	2017	2018	2019
Sub-Saharan Africa	4.9	4.9	5.4	5.5	5.8	5.5	5.6	5.4
ASEAN-5	6.2	5.2	4.9	5.4	5.6	5.6	5.6	5.6
Emerging and developing Asia	6.7	6.5	6.7	6.8	6.7	6.6	6.5	6.5
Latin America and the Caribbean	3.1	2.7	2.5	3.0	3.3	3.5	3.5	3.6
World	**3.2**	**3.0**	**3.6**	**3.9**	**4.0**	**3.9**	**3.9**	**3.9**

Source: IMF World Economic Outlook Database; April 2014 Update

Worldwide, the strongest economic growth was experienced in Asia, in particular Developing Asia which includes China and India, recording growth more than double the global average (+6.5% versus +3%). Despite that, 2013 represents a slight slowdown in growth from the +6.7% recorded in 2012.

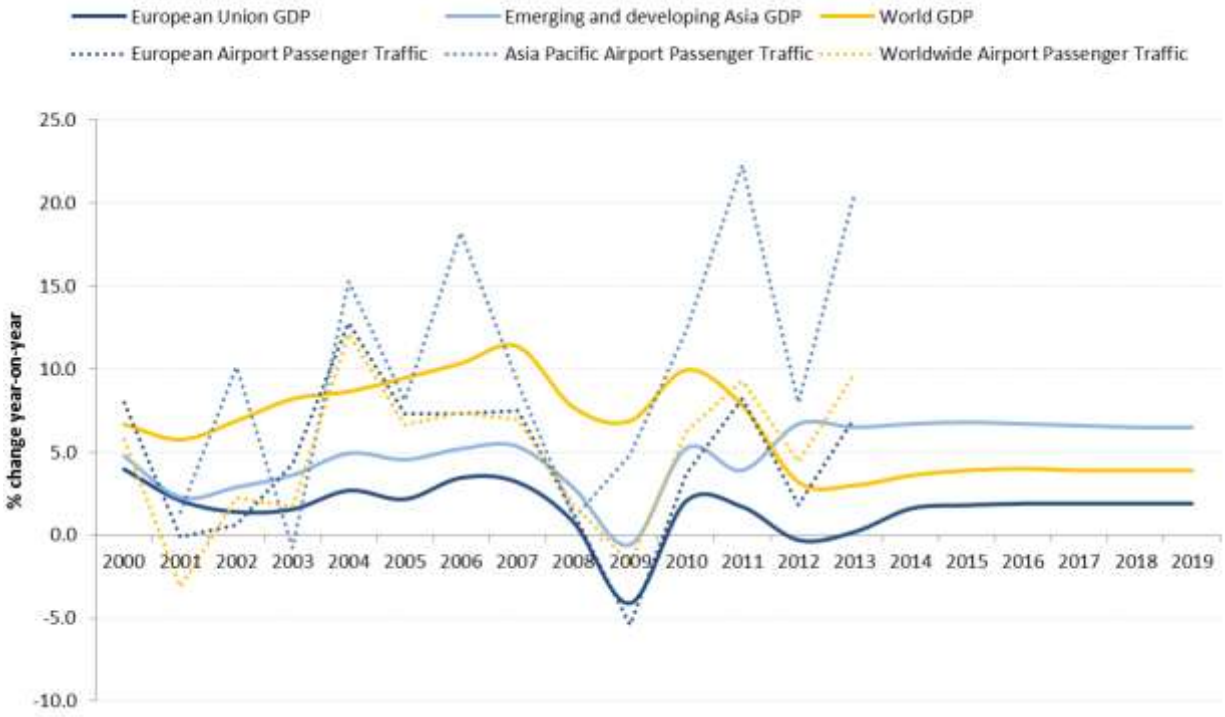
Focussing on Europe, the most evident theme to note is the slightly healthier economic situation in 2013 for the European Union and Euro area countries. Still, GDP growth rates were far below the world average of 3.0%. The IMF reported that GDP turned positive due to the strong reduction in the pace of fiscal tightening.

Continuing the general trend of the past several years, the highest economic growth rates in 2013 on the European continent were recorded by Emerging and Developing European nations (2.8%) and the Commonwealth of Independent States (2.1%). Emerging and Developing Europe continuous growth benefited from the European Union's downturn, but will reduce in 2014 despite demand recovery from Western Europe. On the other hand, Commonwealth of Independent States growth has decelerated due to policy uncertainty, which is expected to continue due to its related geopolitical risks[4].

Figure 1.5 illustrates the correlation between growth of air travel demand and economic growth. Witness the 'tracking' of the same coloured lines and it is reasonable to conclude that, for instance, when the global economy faltered in 2008 and 2009 and recovered in 2010, demand for air travel did likewise. The 2012 downturn also altered air traffic, but strongly recovered in 2013. It is also reasonable to conclude that where economic growth is highest, that region will also experience the highest growth in air travel demand – propensity to travel.

[4] International Monetary Fund, World Economic Outlook Database

Figure 1.5: GDP Growth vs. Airport Passenger Growth



Source: ACI & IMF

1.3 Air Passenger Traffic Growth in 2013

1.3.1 Europe in a Global Context

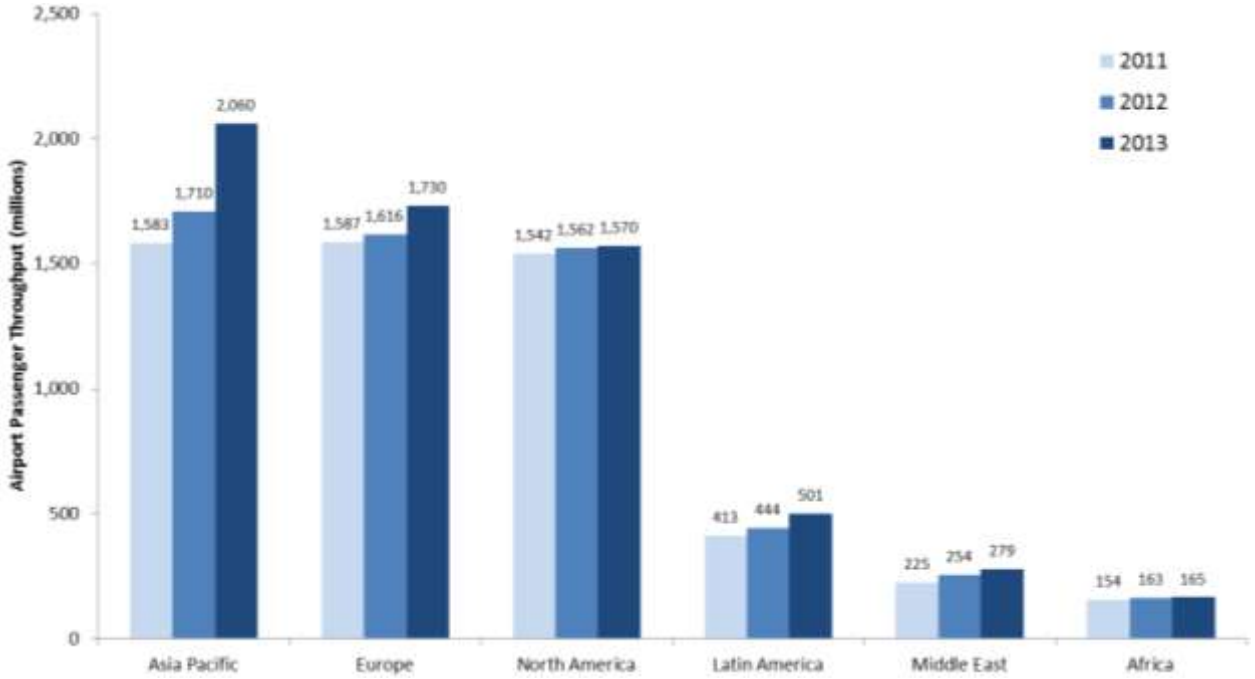
In 2013, ACI reported that a total of 6.3 billion passengers passed through worldwide airports, an increase of +9.7% compared to 2012.

Overall, European airports had a firm and steady pace through 2013, as illustrated in Figure 1.2, achieving passenger throughput growth of +7.1%, despite the rough economic climate. According to ACI's full year 2013 data, European airport passenger throughput rose from 1.62 billion in 2012 to 1.73 billion in 2013.

The European air transport market continues to improve its position ahead of North America in 2013, though Asia Pacific's growth outpaced Europe. Latin America, far from the main aviation market regions, remain with a robust and outstanding growth rate and will continue booming in the coming years thanks to the World Cup and Olympics in Brazil, as well as its GDP rate increase.

Figure 1.6 shows the relative market sizes by global region, highlighting the clear two-tier hierarchy existing on the global stage with Asia Pacific, Europe and North America competing for dominance, and Latin America, Middle East and Africa emerging as developing markets.

Figure 1.6: Worldwide Airport Passenger Throughput by Region in 2012 & 2013

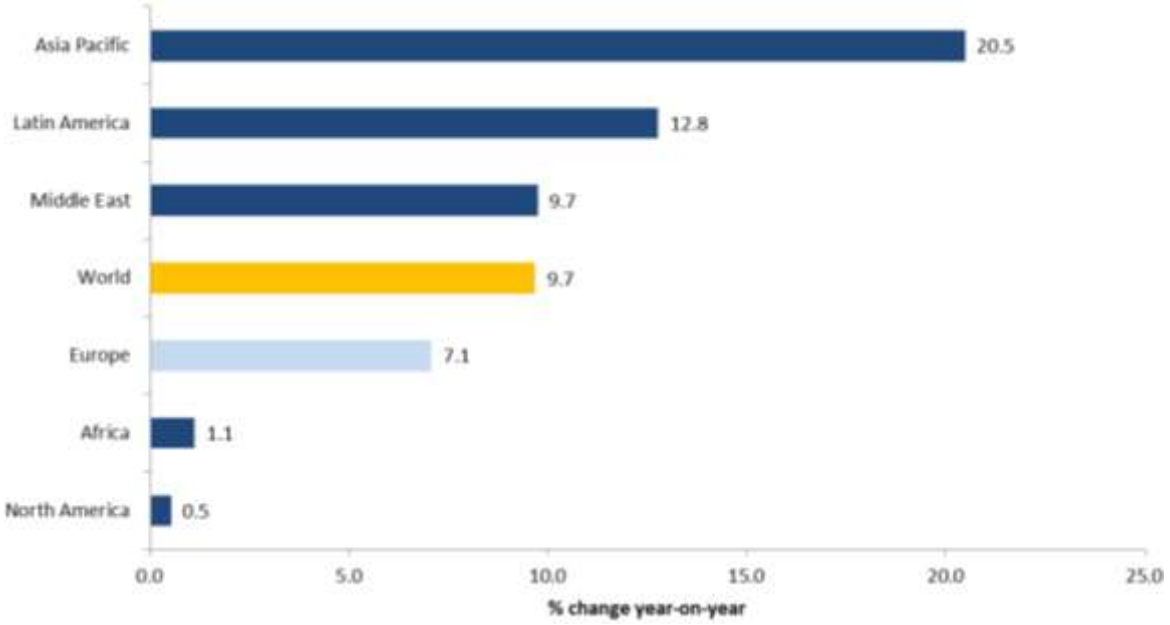


Source: ACI Worldwide Airport Traffic Report

Figure 1.7 confirms the air traffic market's strong recovery despite economic uncertainty, mainly due to the emerging market growth. Asia Pacific meteoric growth has even shadowed Latin America and Middle East, having grown at a CAGR of +9.1% and +11.9% respectively since 2002.

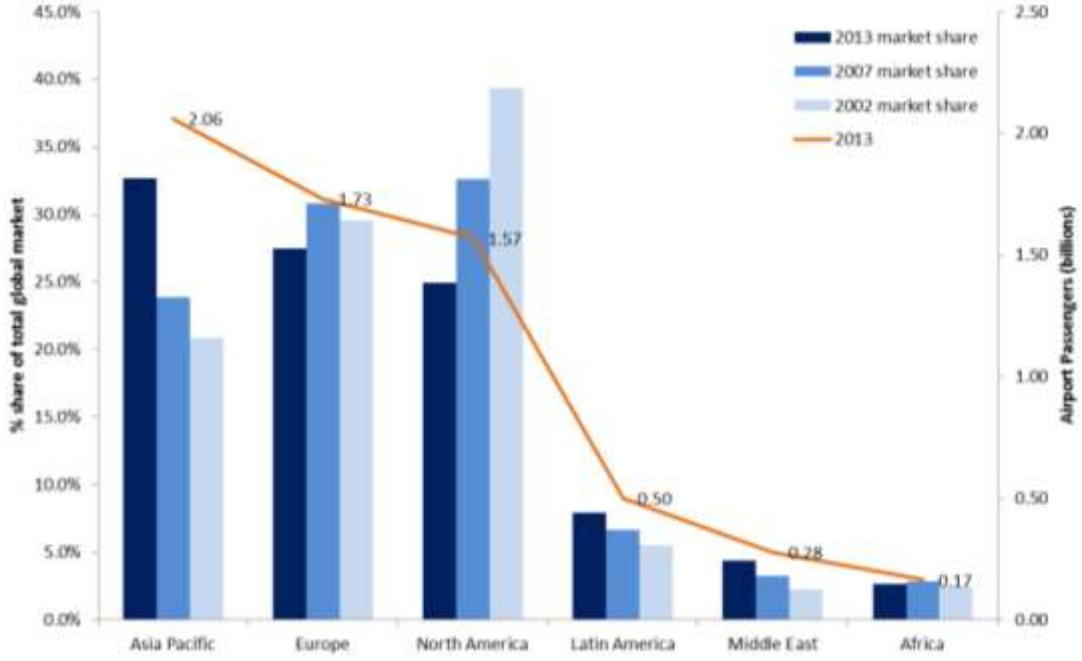
North America did not bounce back to outpace Europe with a relatively stable passenger growth versus 2012, posting a marginal increase of +0.5%, because of its domestic economic uncertainty and stagnant incomes, and capacity discipline by most US carriers.

Figure 1.7: Passenger Traffic Growth (%) at Worldwide Airports by Region 2013 vs. 2012



Source: ACI Worldwide Airport Traffic Report

Figure 1.8: Regional Distribution of Worldwide Airport Passenger Traffic and Historic Market Shares



Source: ACI Worldwide Airport Traffic Report

Figure 1.8 presented above underlines the geographical shift in the focus of growth. North American airports ruled the market share of global passenger throughput with a total of 40% in 2002. However, since then Asia Pacific and to a much lesser extent European airports have eroded that dominance and gained market share to achieve parity, and are now leading air traffic market position.

During this period (2002-2013), European airports have experienced an increased passenger throughput at an average year-on-year rate of +4.7%. When the peaks and troughs are ironed out, underlying growth of over +4% per year represents a solid achievement for a mature air transport market, indicating the success of and further potential for growth into emerging markets.

However, Europe's growth must be put into context alongside the extraordinary growth recorded by Asia Pacific airports over the same time period. Asia Pacific's market share of total global airport passenger throughput increased from 21% in 2002 to 33% in 2013 (doubled Europe's airports achievement).

Compared to the North American and Asia Pacific market shares of global air passenger traffic, Europe's has remained fairly constant in the last decade, hovering around 30% since 2002, but falling to 27% in 2013.

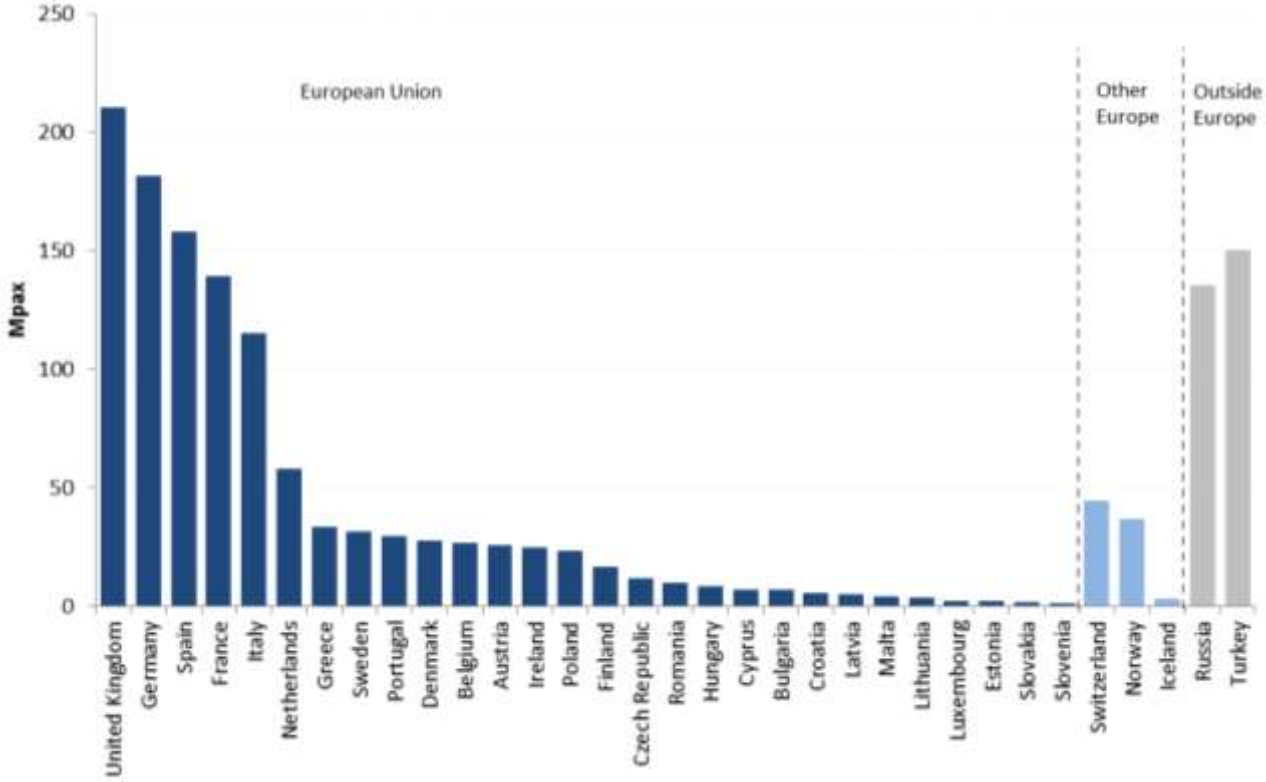
The market share gain made by Asia Pacific has been at the expense of North America and Europe. The saturated North American market has experienced sluggish growth between 2002 and 2013, growing at an average year-on-year rate of +1.4%. Its market share reduced from 39% to 25% during this period.

This new power shift is set to continue with the Asia Pacific airports increasing in size and global importance, driven by the economic growth in China and India, as well as an increasing awareness by ASEAN of the importance of liberalisation in its air transport market.

1.3.2 The European Air Transport Market

Within Europe, there is considerable variety in the volume of air passenger traffic at an individual country level. Figure 1.9 ranks the 28 EU member states in 2013 (Croatia joined in July 2013) according to size of air transport market, and compares against ECAA states and neighbouring Turkey and Russia.

Figure 1.9: European Airport Passenger Traffic Throughput in 2013 by Country

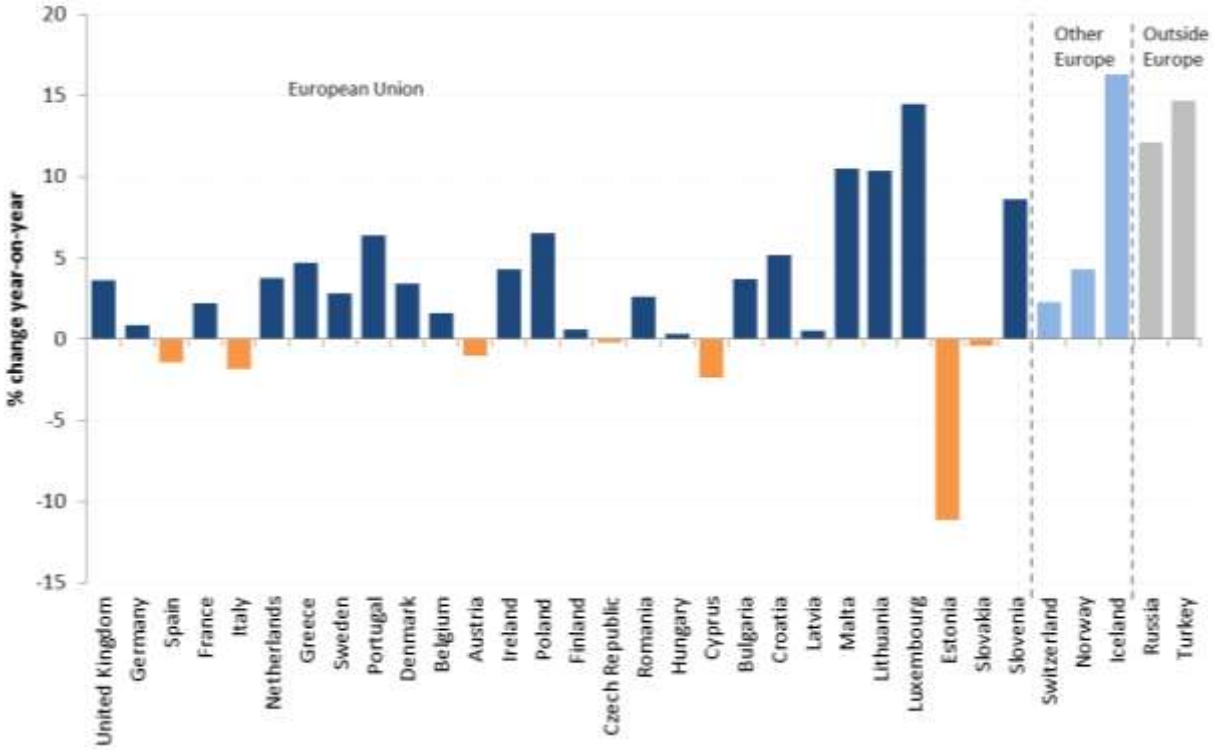


Source: Eurostat (ACI for Turkey and Russia)

Based on Eurostat data it is evident that Europe's air transport market is dominated by five countries – the UK, Germany, Spain, France and Italy. Combined, these EU member states accounted for almost 70% of the European Union total airport passenger throughput in 2013. The remaining 30% is distributed among 23 member states, highlighting the two tier hierarchy that exists between the mature and emerging markets within the bloc. It is interesting to note that neighbouring Turkey and Russia have expanded their air transport markets in recent years to the extent that they now rival the top five EU countries in terms of passenger volumes. Furthermore, given the rate of expansion in Turkey and Russia, these will overtake the top tier EU markets in the near future, becoming a worldwide leading market.

This trend is illustrated in Figure 1.10 where we see growth in the Russian and Turkish air transport markets in 2013 versus 2012 outpacing any major EU market.

Figure 1.10: European Airport Passenger Traffic Growth 2013 vs. 2012 by Country



Source: Eurostat (ACI for Turkey and Russia)

The European Union Member States recording the highest growth in 2012 included Luxembourg (+14.5%) and Malta (10.5%). However, no fewer than seven of the EU28 experienced declines in 2013, which was two less compared to 2012. The most significant of these, due to the relative size of the markets, are Spain and Italy – the continuous economic woes of both being well documented, and their respective flag carriers staggering in the domestic and international market. Estonia, after a tremendous growth in 2012, receded in 2013 to same levels as 2011, especially caused as its main carrier Estonian Air's reduced heavily its network (over 50% by ASK and 38% by number of passengers). Although, the market is small (2 million passengers in 2013) any movement in the airport passenger throughput is going to be amplified. .

New member Croatia cannot be fully addressed because it joined in mid-2013 thus causing a before and after EU traffic, where consequential results of joining the EU are usually noticeable after a year.

The relationship between economic growth and air travel demand can be used to justify the growth or decline in some markets (such as Spain, Italy, Turkey and Russia) but other factors including air transport market maturity; airport capacity and congestion; the policy and regulatory environment; low cost carrier stimulation; and taxation and pricing regimes will all contribute to affecting the demand for air travel, creating an uneven playing field throughout Europe allowing certain markets to flourish while others decline. An example is Greece, which GDP has been negative since 2008 but has maintained its market and took-off in 2013 thanks to low-cost airlines stimulation and a reviving tourism sector.

Table 1.4 observes the historical growth of passenger traffic in the EU and neighbouring countries, between 2007 and 2013. The immediate point to make, as mentioned previously, is that nine out of the 28 EU member states have experienced a declining trend in air passenger traffic during this period – a relief

as the overall traffic growth statistic reveals signs of strong recovery from the impact of economic and financial crises spreading across the region from 2008, still denting demand for air travel in certain European markets.

Russian and Turkish airports have through the past years been joining ACI constantly and therefore, their values must be assessed carefully. 2013 values and change versus 2012 shall be the prevailing numbers and any previous number shall not be considered.

Table 1.4: Historical European Airport Passenger Traffic Throughput by Country (millions)

Country	2007	2008	2009	2010	2011	2012	2013	% chg '13 v '12	CAGR % 2007-2013
United Kingdom	218.6	214.9	199.2	193.5	202.0	203.5	210.8	3.6	-0.6
Germany	165.9	167.8	160.6	168.8	177.1	180.3	181.9	0.9	1.5
Spain	163.0	162.2	149.0	153.9	165.7	160.4	158.1	-1.4	-0.5
France	120.3	122.7	117.6	126.3	132.6	136.2	139.2	2.2	2.5
Italy	108.7	106.5	103.3	110.7	117.5	117.4	115.2	-1.8	1.0
Netherlands	50.8	50.7	46.7	48.9	54.2	55.9	58.1	3.8	2.3
Greece	34.8	35.1	33.4	32.6	33.8	32.1	33.6	4.7	-0.6
Sweden	27.3	28.1	25.4	26.9	29.9	30.6	31.4	2.8	2.4
Portugal	24.1	24.8	23.8	25.4	27.2	27.9	29.7	6.4	3.5
Denmark	24.2	24.5	22.4	24.5	25.9	26.7	27.6	3.4	2.2
Belgium	21.0	22.3	21.7	23.0	25.4	26.2	26.6	1.6	4.0
Austria	23.1	24.1	22.0	23.7	25.3	26.1	25.8	-1.0	1.9
Ireland	30.1	30.2	26.4	23.2	23.4	23.6	24.6	4.3	-3.3
Poland	17.2	18.7	17.1	18.4	20.7	21.9	23.3	6.5	5.2
Finland	14.4	14.8	13.8	14.3	16.4	16.5	16.6	0.6	2.4
Czech Republic	13.3	13.6	12.6	12.4	12.8	11.9	11.9	-0.2	-1.8
Romania	7.0	8.1	8.0	8.9	9.8	9.7	10.0	2.6	6.2
Hungary	8.6	8.4	8.1	8.2	8.9	8.4	8.5	0.3	-0.2
Cyprus	7.3	7.6	7.0	7.2	7.2	7.3	7.1	-2.4	-0.4
Bulgaria	6.1	6.4	5.9	6.2	6.7	6.9	7.1	3.7	2.6
Croatia **	-	4.6	4.4	4.7	5.0	5.5	5.7	5.2	4.6
Latvia	3.2	3.7	4.1	4.7	5.1	4.8	4.8	0.5	7.2
Malta	3.0	3.1	2.9	3.3	3.5	3.7	4.0	10.5	5.2
Lithuania	2.2	2.6	1.9	2.3	2.7	3.2	3.5	10.4	8.1
Luxembourg	1.6	1.7	1.5	1.6	1.8	1.9	2.2	14.5	4.8
Estonia	1.7	1.8	1.3	1.4	1.9	2.2	2.0	-11.1	2.2
Slovakia	2.3	2.6	2.0	1.9	1.8	1.6	1.6	-0.4	-6.0
Slovenia	1.5	1.7	1.4	1.4	1.4	1.2	1.3	8.6	-3.0
EU28 Total	**1101.3**	**1108.7**	**1039.1**	**1073.6**	**1140.7**	**1148.1**	**1166.5**	**1.6**	**1.0**
Switzerland	34.8	36.8	36.1	37.7	41.6	43.4	44.3	2.3	4.1
Norway	27.9	29.0	28.1	30.0	33.0	35.2	36.7	4.3	4.7
Iceland	2.5	2.2	1.9	2.1	2.5	2.8	3.2	16.3	4.5
Russia	55.0	79.5	55.1	66.9	65.2	91.1	135.7	12.1	-

Country	2007	2008	2009	2010	2011	2012	2013	% chg '13 v '12	CAGR % 2007-2013
Turkey	66.8	72.9	77.7	92.8	105.9	117.6	150.2	14.1	-

Source: Eurostat (ACI for Turkey and Russia)
http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=avia_paoc&lang=en

The European air transport industry does not exist in isolation. Next we focus on the global scene to explore the reasons for discrepancies in air travel demand growth between worldwide regions. The following subsection investigates the variation in growth at the Top 30 airports in 2013 around the globe in mature and emerging markets.

1.3.3 The Global Air Transport Market

Worldwide Airport Passenger Traffic

The top 30 global airports by passenger throughput in 2013 have been examined and are shown in Table 1.5 (by passenger volume) and Table 1.6 (by passenger growth) below.

Table 1.5: Top 30 Global Airports by Passengers (millions) in 2013

Rank	Airport	Region	2013	% chg '13 v '12
1	Atlanta GA (ATL)	N. America	94.43	-1.1%
2	Beijing (PEK)	Asia Pacific	83.71	2.2%
3	London (LHR)	Europe (EU)	72.37	3.3%
4	Tokyo (HND)	Asia Pacific	68.91	3.2%
5	Chicago IL (ORD)	N. America	66.78	0.2%
6	Los Angeles CA (LAX)	N. America	66.67	4.7%
7	Dubai (DXB)	Middle East	66.43	15.2%
8	Paris (CDG)	Europe (EU)	62.05	0.7%
9	Dallas/Fort Worth TX (DFW)	N. America	60.47	3.2%
10	Jakarta (CGK)	Asia Pacific	60.14	4.1%
11	Hong Kong (HKG)	Asia Pacific	59.59	6.3%
12	Frankfurt (FRA)	Europe (EU)	58.04	0.9%
13	Singapore (SIN)	Asia Pacific	53.73	5.0%
14	Amsterdam (AMS)	Europe (EU)	52.57	3.0%
15	Denver CO (DEN)	N. America	52.56	-1.1%
16	Guangzhou (CAN)	Asia Pacific	52.45	8.6%
17	Bangkok (BKK)	Asia Pacific	51.36	-3.1%
18	Istanbul (IST)	Europe (Non-EU)	51.30	13.7%
19	New York NY (JFK)	N. America	50.42	2.3%
20	Kuala Lumpur (KUL)	Asia Pacific	47.50	19.1%
21	Shanghai (PVG)	Asia Pacific	47.19	5.1%
22	San Francisco CA (SFO)	N. America	44.95	1.2%
23	Charlotte NC (CLT)	N. America	43.46	5.4%
24	Incheon (ICN)	Asia Pacific	41.68	6.4%

Rank	Airport	Region	2013	% chg '13 v '12
25	Las Vegas NV (LAS)	N. America	40.93	0.3%
26	Miami FL (MIA)	N. America	40.56	2.8%
27	Phoenix AZ (PHX)	N. America	40.34	-0.3%
28	Houston TX (IAH)	N. America	39.80	-0.2%
29	Madrid (MAD)	Europe (EU)	39.72	-12.1%
30	Munich (MUC)	Europe (EU)	38.67	0.8%

Source: ACI Worldwide Airport Traffic Report

In terms of passenger volume, North American airports dominate the top 30 in the world with twelve airports recording 641 million passengers; Asia Pacific has ten airports with 566 million passengers; Europe has seven airports with 375 million passengers (the EU has six airports with 323 million passengers highlighted); and the Middle East has one airport with 66 million passengers (Dubai).

London Heathrow remains the leading airport in Europe in terms of passengers, exceeding 72 million annual passengers in 2013. Among Europe's top airports, Madrid suffered a major drop in the global rankings with a further decline in passengers. Amsterdam and Frankfurt growth was not enough to escalate in the ranking due to the continuous growth of airports such as Istanbul Ataturk in Europe and Kuala Lumpur and Singapore in Asia Pacific.

Table 1.6: Top 30 Global Airports by Passenger Growth (%) in 2013

Rank	Airport	Region	2013	% chg
1	Kuala Lumpur (KUL)	Asia Pacific	47.50	19.1
2	Dubai (DXB)	Middle East	66.43	15.2
3	Istanbul (IST)	Europe (Non-EU)	51.30	13.7
4	Guangzhou (CAN)	Asia Pacific	52.45	8.6
5	Incheon (ICN)	Asia Pacific	41.68	6.4
6	Hong Kong (HKG)	Asia Pacific	59.59	6.3
7	Charlotte NC (CLT)	N. America	43.46	5.4
8	Shanghai (PVG)	Asia Pacific	47.19	5.1
9	Singapore (SIN)	Asia Pacific	53.73	5.0
10	Los Angeles CA (LAX)	N. America	66.67	4.7
11	Jakarta (CGK)	Asia Pacific	60.14	4.1
12	London (LHR)	Europe (EU)	72.37	3.3
13	Tokyo (HND)	Asia Pacific	68.91	3.2
14	Dallas/Fort Worth TX (DFW)	N. America	60.47	3.2
15	Amsterdam (AMS)	Europe (EU)	52.57	3.0
16	Miami FL (MIA)	N. America	40.56	2.8
17	New York NY (JFK)	N. America	50.42	2.3
18	Beijing (PEK)	Asia Pacific	83.71	2.2
19	San Francisco CA (SFO)	N. America	44.95	1.2
20	Frankfurt (FRA)	Europe (EU)	58.04	0.9
21	Munich (MUC)	Europe (EU)	38.67	0.8
22	Paris (CDG)	Europe (EU)	62.05	0.7
23	Las Vegas NV (LAS)	N. America	40.93	0.3

Rank	Airport	Region	2013	% chg
24	Chicago IL (ORD)	N. America	66.78	0.2
25	Houston TX (IAH)	N. America	39.80	-0.2
26	Phoenix AZ (PHX)	N. America	40.34	-0.3
27	Denver CO (DEN)	N. America	52.56	-1.1
28	Atlanta GA (ATL)	N. America	94.43	-1.1
29	Bangkok (BKK)	Asia Pacific	51.36	-3.1
30	Madrid (MAD)	Europe (EU)	39.72	-12.1

Source: ACI Worldwide Airport Traffic Report

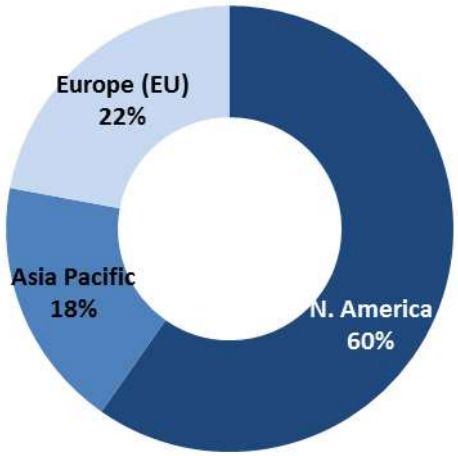
Ranking these airports in terms of growth rates, however, shows different pictures with six out of the top ten being Asia Pacific airports. Six out of the bottom ten airports are North American, reinforcing the trend pointed to earlier where a shift in focus has favoured the expansion of Asia Pacific airports. The fastest growing airport in 2013 was Kuala Lumpur, achieving an outstanding +19.6% growth on the back of rapidly expanding base carriers such as Malaysian Airlines (+28.5%), whose fleet is in constant expansion since 2011, Air Asia X (+22.5%) and Air Asia (+11.1%), all 3 accounting for the 70% of the total market

In contrast to Asia Pacific's trend, EU airports experienced sluggish growth in 2013, with London (+3.3%) the top performer in the bloc. Madrid (as mentioned above) was the worst performing airport in the World Top 30, attributable in the most part to volatile airline activity – specifically, the effects of IAG merger with Vueling, based in Barcelona, which overtook most of Iberia's domestic operation impacting on Iberia's growth rate to a dramatic -28.8% versus 2012. Also, Spanish economy (GDP growth -0.1% in 2013) is still a factor supressing demand for air travel.

Historical Growth by World Region

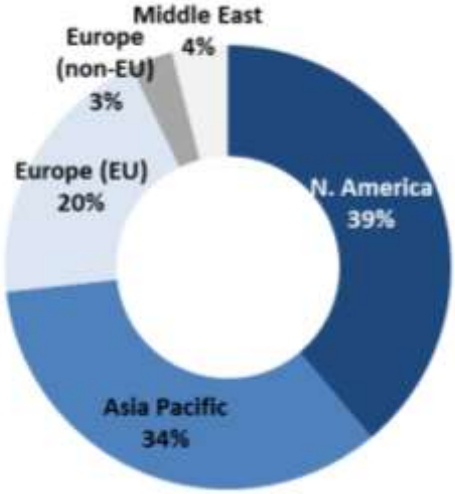
Regional market share has changed markedly from 2005 when North America dominated the top 30 global airports by passenger throughput, accounting for 60%. North America's decline has been at the expense of Asia Pacific's growth that now accounts for 34% of the top 30 global airports' passenger throughput in 2013 up from 18% in 2005, pushing past EU airports to 20% of the total market share versus 22% in 2005.

Figure 1.11: Top 30 Global Airports by Passengers & Regional Share 2005



Source: ACI Worldwide Airport Traffic Report

Figure 1.12: Top 30 Global Airports by Passengers & Regional Share 2013



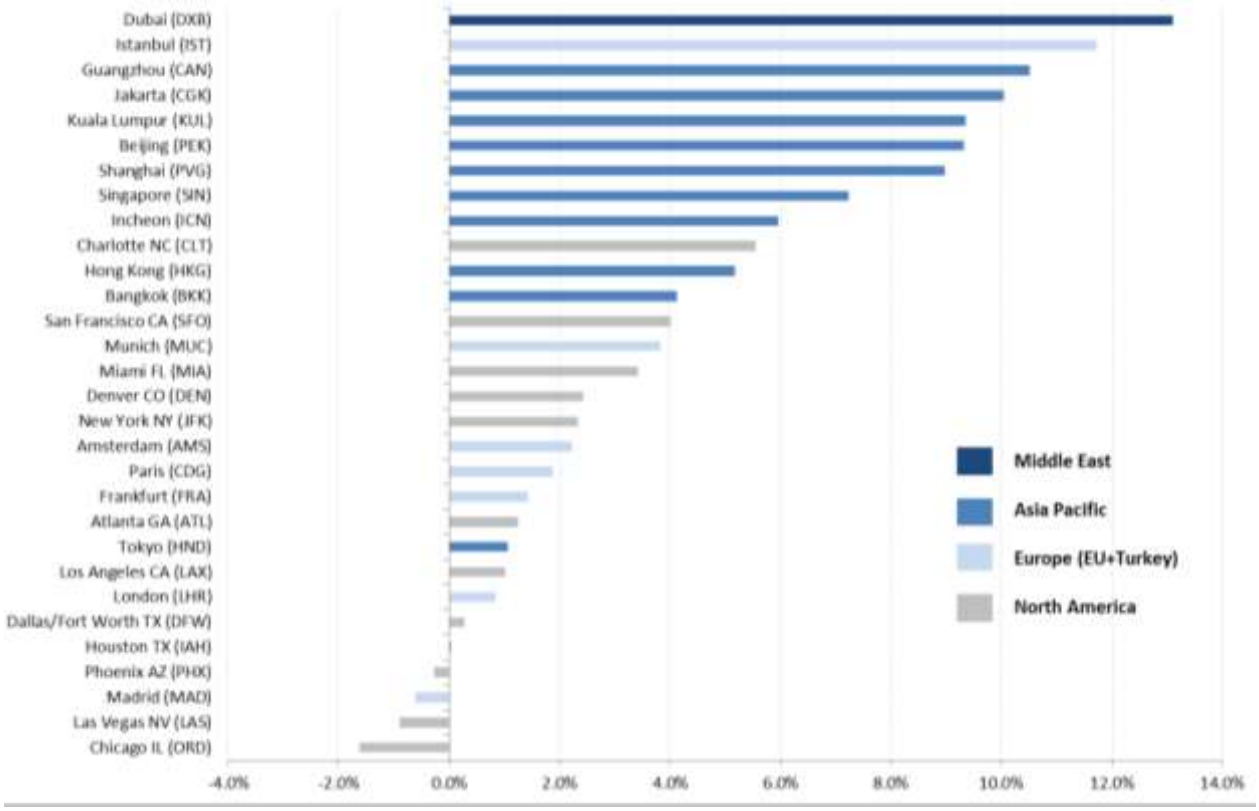
Source: ACI Worldwide Airport Traffic Report

Exploring the passenger growth of the top 30 global airports paints a picture of a changing landscape. Growth in Asia Pacific, and to a lesser extent the Middle East (albeit from a small base), is far outpacing that of the EU and North America. This reflects the maturity of the latter markets but also the continued shift in focus of economic growth to Asia coupled with increasing liberalisation in the region, and an unconstrained operating environment in the Middle East nations.

Historical Growth by Worldwide Airport

Looking at the individual airport detail, a micro-analysis was undertaken between 2005 and 2013. The colour-coding in Figure 1.13 allows to immediately identify the block of blue (Asia Pacific) in the 'high growth' portion of the chart, indicating the rapid expansion experienced in the Asia Pacific region over the last decade. Of the major global airports, only Dubai and Istanbul outside of Asia Pacific have achieved higher average annual growth rates than the top-performing Asia Pacific airports since 2005. At the other end of the spectrum, Madrid joined the group of airports that recorded declining passenger traffic levels between 2005 and 2013, which in the past have mainly been North American airports.

Figure 1.13: Top 30 Global Airports – Passenger Compound Annual Growth Rate 2005-2013



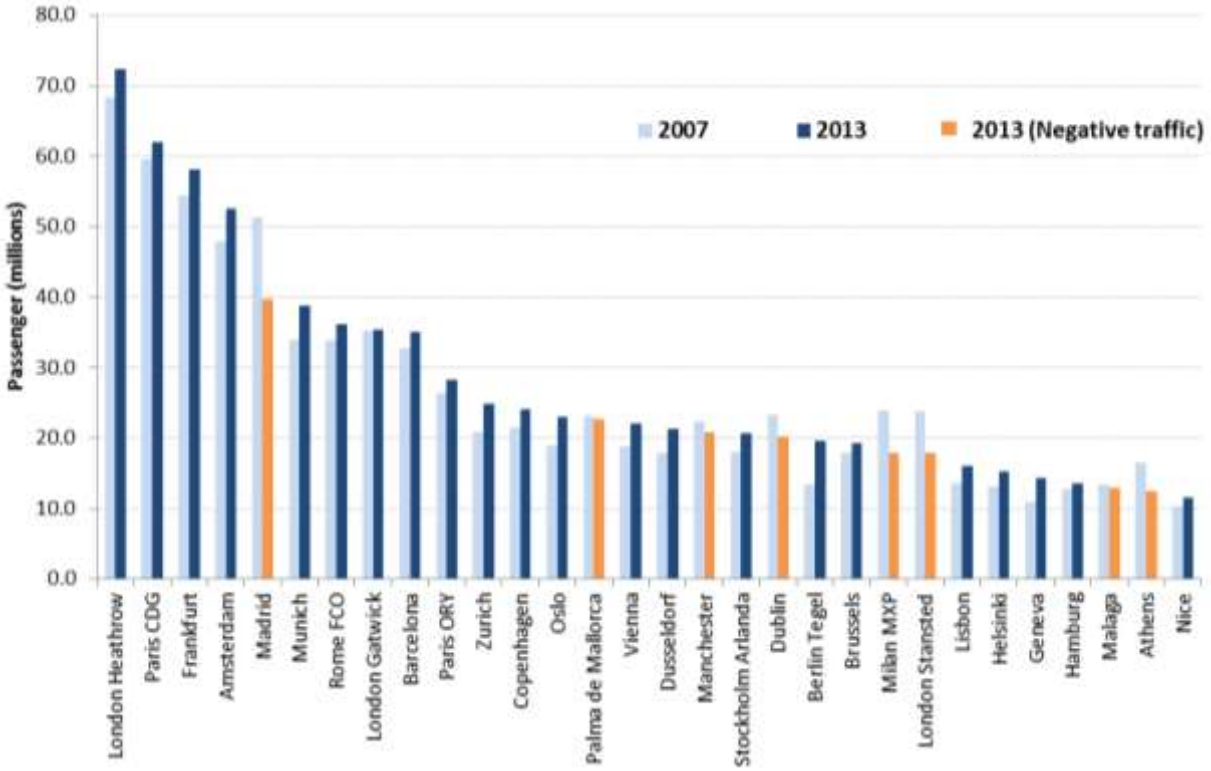
Source: ACI and Flightglobal for the airports that were not in top 30 in 2005

Historical Growth at Top 30 European Airports

According to Eurostat, of the Top 30 European airports by passenger throughput in 2013, as many as eight have seen declining passenger volumes since 2007 (Figure 1.14). Madrid Barajas, Iberia's premier hub airport, is the most significant of these. It has previously been mentioned in this report that Madrid has slipped down the global airport rankings, but has largely maintained its position as one of Europe's leading airports, only ceding its place to Amsterdam. Analysing the current trend, Madrid is likely to fall even further behind as Munich and Barcelona have grown at a positive rate the past 4 years. Also, Iberia's performance will be a key factor for Madrid to resume positive growth.

Also of significance is that three of the UK's top airports – London Gatwick, Manchester and London Stansted – have all lost or only retained passenger traffic relative to 2007 levels. The most dramatic of these is Stansted, declining at an average year-on-year rate of -4.7% between 2007 and 2013. This London airport serves mainly leisure air travel demand and is dominated by Ryanair, which over recent years has expanded its European operations outside the UK. Nevertheless, London-Stansted resumed positive growth in 2013.

Figure 1.14: Top 30 European (ECAA) Airports by passengers in 2013 compared with 2007



Source: Eurostat (ACI 2013 figures for AMS, FCO, OSL, ARN, MXP, LIS, ATH)

Milan Malpensa has also experienced a notable decline in the European Top 30, behind London-Stansted. Both airports have an over-reliance on LCCs to grow their traffic base. LCC passengers are more sensitive to price and liable to seek cheaper destinations or forego air travel altogether, meaning this section of the market is very sensitive to cuts in disposable income resulting from the recent depressed economic environment. Additionally, Alitalia's loss of market share, also impacting Rome FCO, makes the two Italian airports, together with Madrid, the Top 30 airports with the largest drop against to 2012.

Despite certain airports struggling to enhance their market position (8 out of Top 30), most European airports started showing recovery from the economic downturn and have kept a steady growth, already overtaking their results from 2007 and forecasting a continuously positive trend. The best performer in the Top 30 is once again Berlin Tegel (+6.6% CAGR 2007-13), followed by Geneva and Oslo (Table 1.7).

Table 1.7: Top 30 European (ECAA) Airports by Passengers – Historical Growth (millions)

Rank	Airport	Country	2007	2013	CAGR % 2007-2013
1	London Heathrow (LHR)	United Kingdom	68.3	72.4	1.0
2	Paris Charles de Gaulle (CDG)	France	59.5	62.0	0.7
3	Frankfurt (FRA)	Germany	54.4	58.2	1.1
4	Amsterdam (AMS)	Netherlands	47.8	52.6	1.6
5	Madrid (MAD)	Spain	51.4	39.7	-4.2
6	Munich (MUC)	Germany	34.0	38.8	2.2
7	Rome Fiumicino (FCO)	Italy	33.8	36.2	1.1
8	London Gatwick (LGW)	United Kingdom	32.8	35.5	0.1
9	Barcelona (BCN)	Spain	35.3	35.1	1.2
10	Paris Orly (ORL)	France	26.4	28.3	1.1
11	Zurich (ZRH)	Switzerland	20.8	24.9	3.1
12	Copenhagen (CPH)	Denmark	21.4	24.0	2.0
13	Oslo (OSL)	Norway	23.1	23.0	3.2
14	Palma de Mallorca (PMI)	Spain	18.8	22.7	-0.3
15	Vienna (VIE)	Austria	19.0	22.1	2.7
16	Dusseldorf (DUS)	Germany	17.9	21.2	2.9
17	Manchester (MAN)	United Kingdom	22.3	20.8	-1.2
18	Stockholm Arlanda (ARN)	Sweden	18.0	20.7	2.4
19	Dublin (DUB)	Ireland	23.3	20.1	-2.4
20	Berlin Tegel (TXL)	Germany	17.9	19.6	6.6
21	Brussels (BRU)	Belgium	24.0	19.2	1.2
22	Milan Malpensa (MXP)	Italy	13.4	17.9	-4.7
23	London Stansted (STN)	United Kingdom	23.8	17.9	-4.7
24	Lisbon (LIS)	Portugal	13.5	16.0	2.8
25	Helsinki (HEL)	Finland	13.1	15.3	2.6
26	Geneva (GVA)	Switzerland	10.9	14.4	4.8
27	Hamburg (HAM)	Germany	12.9	13.5	0.8
28	Malaga (AGP)	Spain	16.5	12.9	-0.7
29	Athens (ATH)	Greece	13.5	12.5	-4.5
30	Nice (NCE)	France	10.4	11.6	1.8

Source: Eurostat (ACI 2013 figures for AMS, FCO, OSL, ARN, MXP, LIS, ATH)

As Table 1.8 demonstrates, if non-EU airports are benchmarked against EU airports, the most successful airports in terms of passenger traffic growth in the last five years are Turkish and Russian for different reasons. Russia has been very active in expanding bilateral air service agreements to cope with the surge in outbound air travel demand created by the Russian population's increasing propensity to fly. This is shown in Table 1.8, where the two main Moscow airports' traffic growth since 2007 has been exceptional and close to double, and St Petersburg has already doubled its size.

Table 1.8: Major Competitor airports outside ECAA

Airport	Country	2007	2013	CAGR % 2007-2013
Istanbul (IST)	Turkey	25.6	51.3	12.3%
Moscow (DME)	Russia	18.8	30.9	8.6%
Moscow (SVO)	Russia	14.0	29.3	13.1%
Antalya (AYT)	Turkey	17.8	27.3	7.4%
Istanbul (SAW)	Turkey	3.8	18.8	30.6%
St Petersburg (LED)	Russia	6.1	12.9	13.2%

Source: ACI Worldwide Airport Traffic Report

With reference to Turkey, the country has also witnessed significant economic growth reflected in Istanbul's pre-eminence as a leading hub in Europe, with Atatürk Airport growing as a result of Turkish Airlines rapid expansion and evolution into a global carrier. Istanbul's Sabiha Gökçen airport has undergone rapid expansion in the last five years as a low-cost alternative to Atatürk. Antalya has benefited from its ability to attract increasing volumes of visitors, being a prominent destination in the Mediterranean for international tourism.

1.3.4 Trends in Average Passengers per ATM

The nature and role of an airport attracts different type of carriers that impact the aircraft mix and thus the level of average number of passengers per air transport movement (ATM) it is likely to achieve – whether it is an international gateway, domestic hub, point-to-point or regional airport.

Where airports are runway-capacity constrained, passenger throughput can be grown by increasing the average load factor. By altering the aircraft mix, i.e. introducing greater proportion of high seat density aircraft types, an airport's passenger volume growth can be achieved without the airlines increasing the number of movements.

However, this is not a panacea for capacity constrained major hub airports, as there are commercial capacity limitations as well as a balance of the right mix of short-haul connecting services to feed long-haul routes. Increasing the average number of passengers per movement by introducing larger aircraft at an airport cannot happen indefinitely – there is a threshold such as terminal constraints.

To investigate this further, the evolution of average passengers per ATM at the Top 30 global airports, ranked by passenger volume in 2013, has been analysed in Table 1.9 below.

Table 1.9: Top 30 Global Airports Ranked by Passenger Volume (in 2013) – Passengers per ATM evolution[5]

Rank	Airport Name	2007	2008	2009	2010	2011	2012	2013	Diff. '13 vs '07	% chg '13 vs '12
1	Dubai (DXB)	171	174	174	182	181	190	198	27	4.5
2	Hong Kong (HKG)	193	191	193	203	194	193	191	-1	-0.6
3	Bangkok (BKK)	165	165	166	168	167	175	179	13	1.8

[5] Las Vegas, Atlanta, Dallas and Charlotte are not illustrated due to data inconsistency. This is primarily because air traffic movements data has not been selected uniformly, accounting non-commercial operations as commercial. Therefore, only Top 26 are illustrated.

Rank	Airport Name	2007	2008	2009	2010	2011	2012	2013	Diff. '13 vs '07	% chg '13 vs '12
4	Incheon (ICN)	178	170	169	186	180	177	176	-2	-0.7
5	Tokyo (HND)	201	197	184	187	165	171	171	-31	0.1
6	Singapore (SIN)	179	174	165	169	164	166	164	-15	-1.4
7	London (LHR)	144	143	144	147	147	149	155	11	3.7
8	Jakarta (CGK)	131	129	136	145	148	152	151	20	-0.8
9	Beijing (PEK)	`	130	134	143	148	147	147	13	0.3
10	Kuala Lumpur (KUL)	138	131	132	140	141	141	145	8	2.9
11	Shanghai (PVG)	139	128	131	145	143	143	144	5	1.0
12	Paris (CDG)	118	118	120	127	129	135	141	23	4.8
13	Guangzhou (CAN)	120	121	124	129	134	133	138	18	3.4
14	New York NY (JFK)	115	116	116	124	124	130	132	16	1.0
15	Frankfurt (FRA)	117	118	117	122	123	127	131	13	3.1
16	Amsterdam (AMS)	114	116	115	122	123	125	128	14	2.5
17	Istanbul (IST)	105	112	112	117	124	130	126	21	-3.2
18	Madrid (MAD)	108	109	111	115	116	121	119	11	-1.7
19	Los Angeles CA (LAX)	106	107	112	113	112	115	118	12	3.0
20	Miami FL (MIA)	103	107	113	112	114	118	117	15	-0.4
21	San Francisco CA (SFO)	110	108	109	112	112	115	116	7	1.5
22	Munich (MUC)	84	86	88	95	98	103	108	24	5.1
23	Phoenix AZ (PHX)	89	89	92	95	97	99	97	7	-2.7
24	Denver CO (DEN)	85	86	86	86	87	90	94	9	4.2
25	Houston TX (IAH)	75	76	77	80	81	83	84	9	1.2
26	Chicago IL (ORD)	86	82	81	79	79	79	79	-6	-0.3

Source: ACI Worldwide Airport Traffic Report – US airports calculated with Flightglobal

The figures reflect the airlines' strategy and fleet management to support this as well as again the recovery from the recession. Airports as Dubai, London and Paris have grown in terms of passenger per ATM due to the increased usage of Airbus A380. On the other hand, airports such as Denver, Bangkok and Houston have increased the average Load Factor despite losing passengers. This is the consequence of the airlines removing ATMs to compensate the market fluctuation.

Beijing is an example of a capacity constrained airport. Despite a slight air traffic growth, the results prove the airport has almost reached its threshold and requires a short-term development which is currently ongoing.

Singapore and Tokyo airports have suffered high Load Factor reductions in the past six years despite performing a positive growth rate. In terms of Singapore, the airport has experienced a massive entrance of low-cost carriers, usually operating with narrow-bodied. This has altered Singapore's trend from being a long-haul airport to more a point-to-point. On the other hand, Tokyo Haneda has experienced an alteration in aircraft profile, mainly due to ANA and JAL's switch toward more efficient aircrafts (Boeing 747 operations ended).

1.4 Airline Passenger Traffic

1.4.1 Growth of Passenger Traffic in 2013

Due to lack of detailed and consistent data availability on airline traffic, this section addresses trends in airline traffic growth rather than reporting on absolute numbers. IATA reported that in 2013 its member airlines recorded an increase in demand for scheduled air passenger traffic (RPKs) of +5.2%, very similar to the +5.3% achieved in 2012. Capacity growth (ASKs) rose in 2013 by +4.8%, similar to the RPKs. Across most the world regions, passenger growth outstripped that of capacity growth (as shown in Table 1.10). This contributed to pushing total market Passenger Load Factors up to 79.5% in 2013, from 79.1% in 2012.

Table 1.10: Summary of Air Passenger Traffic growth by Region in 2013 vs. 2012

	Africa	Asia Pacific	Europe	Latin America	Middle East	North America	Industry
Revenue Passenger Kilometres (RPK)	5.1%	7.1%	3.8%	6.3%	11.4%	2.3%	5.2%
Available Seat Kilometres (ASK)	4.5%	7.1%	2.7%	4.5%	12.0%	2.0%	4.8%

Source: IATA

Figure 1.15 shows 2013 monthly year-on-year growth in IATA member airline RPKs for each global region. The trend has a similar profile to the presented in Figure 1.2 (different source). All regions recorded a positive air traffic growth across the year despite the economic uncertainty. Africa is the region with the most significant decrease in the last quarter of 2013.

Figure 1.15: Revenue Passenger Kilometre (RPK) growth of IATA Airlines by Region 2013 vs. 2012

Source: IATA

For European airlines, RPK in 2013 grew a year-on-year rate of 3.8%, but lagged behind the total market average (+5.2%). Capacity growth in Europe was also lower than the industry average, at +2.7 % (Industry

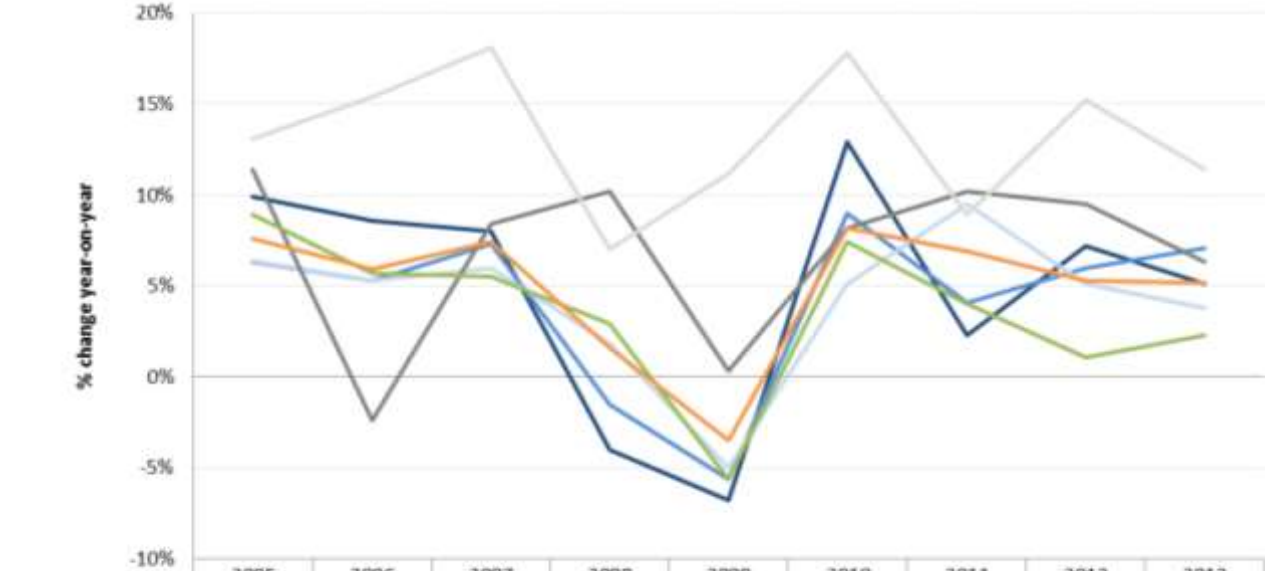
+4.8%). However, despite growing less than the industry, passenger Load Factors (PLF) increased over 2012 levels, with IATA's European members achieving PLFs of 80.2% in 2013, up from 79.6% in 2012.

Middle Eastern carriers saw the highest growth in RPKs (+11.4%) and ASKs (+12.0%) across 2013, the continued expansion of its major home-based carriers (Emirates, Qatar and Etihad), with PLFs remaining stabilized to 77.6%, after increasing 2 points in 2012 versus 2011. Traffic growth of Asia Pacific rose to +7.1% in 2013, at same level as the capacity growth (+7.1%). As a result, the corresponding PLFs achieved by Asia Pacific airlines remained relatively unchanged over 2012 (77.5%). North American carriers recorded once again the lowest growth in passenger traffic (2.3%) and capacity (2.0%), far below the industry average in 2013, but recovering from its 2012 figures. Despite that, PLFs in the region remain the highest in the industry, at 83.4%.

Latin American carriers sustained notable growth rates (+6.3% RPKs; 4.5% ASKs) in 2013, albeit from a lower base than most regions. In line with the rest of the world, IATA's Latin American members recorded an upswing in PLFs in 2013, to reach 78.0%, up from 76.1% in 2012. African carriers experienced positive traffic growth in 2013 (+5.1%), while capacity was also added at a solid rate (+4.5%). However, PLFs across the region remained the lowest of all regions (69.9%) in 2013, despite an increase versus 2012 (67.7%).

1.4.2 Historical Growth in Passenger Traffic

Figure 1.16: Historical RPK annual growth by Region



	2005	2006	2007	2008	2009	2010	2011	2012	2013
Africa	9.9%	8.6%	8.0%	-4.0%	-6.8%	12.9%	2.3%	7.2%	5.1%
Asia/Pacific	6.3%	5.3%	7.3%	-1.5%	-5.6%	9.0%	4.1%	6.0%	7.1%
Europe	6.4%	5.3%	6.0%	1.8%	-5.0%	5.1%	9.5%	5.1%	3.8%
Latin America	11.4%	-2.4%	8.4%	10.2%	0.3%	8.2%	10.2%	9.5%	6.3%
Middle East	13.1%	15.4%	18.1%	7.0%	11.2%	17.8%	8.9%	15.2%	11.4%
North America	8.9%	5.7%	5.5%	2.9%	-5.6%	7.4%	4.0%	1.1%	2.3%
Industry	7.6%	5.9%	7.4%	1.6%	-3.5%	8.2%	6.9%	5.3%	5.2%

Source: IATA

Figure 1.16 shows the historical growth in traffic since 2005, where it is notable to spot the recession in 2008-2009, which caused a universal air traffic demand downturn impact across the regions.

Middle Eastern airlines have in broad terms been growing at the fastest pace followed by Latin American carriers. The growth of European, North American and Asia Pacific airlines have been fairly closely aligned, experiencing similar demand peaks and troughs over the period from 2005 to 2013.

1.4.3 The Top 30 Major Airlines Worldwide

From an analysis of 2013 traffic statistics of major global airlines from across the world, a trend emerges that recognises the shift in focus of air travel demand growth away from the mature markets towards the emerging expanding markets. The Top 30 airlines have been ranked according to RPK volume and RPK growth in Table 1.11. EU airlines are highlighted in green.

Table 1.11: Top 30 Global Airlines by Passenger Traffic (RPKs) and Growth in 2013 (billion)

Rank	Airline	Region	RPKs (billions)	% chg
1	Delta Air Lines	North America	313.7	1
2	United Airlines	North America	287.3	-0.5
3	Emirates Airline	Middle East	215.4	14.2
4	American Airlines	North America	206.6	1.6
5	Southwest Airlines	North America	168.1	1.5
6	Lufthansa	Europe (EU)	153.3	2.3
7	Air France	Europe (EU)	136.4	0.5
8	British Airways	Europe (EU)	131.3	3.9
9	China Southern	Asia Pacific	121.8	8.6
10	China Eastern	Asia Pacific	120.5	10.4
11	US Airways	North America	105.6	5.1
12	Air China	Asia Pacific	104.2	8.6
13	Ryanair	Europe (EU)	100.0	3.8
14	Singapore Airlines	Asia Pacific	95.1	1.4
15	Cathay Pacific	Asia Pacific	93.7	-0.5
16	Turkish Airlines	Europe (non-EU)	92.0	23.2
17	Air Canada	North America	91.4	2.1
18	KLM	Europe (EU)	89.0	3.2
19	Qatar Airways	Middle East	82.4	12
20	Qantas	Asia Pacific	72.9	-4
21	Korean Air	Asia Pacific	68.4	-0.7
22	easyJet	Europe (EU)	67.6	3.6
23	All Nippon Airways	Asia Pacific	66.8	6.8
24	Thai Airways	Asia Pacific	63.5	4.6
25	Aeroflot	Europe (non-EU)	60.2	19.2
26	TAM Linhas Aereas	Latin America	59.3	0.2
27	JetBlue Airways	North America	57.7	6.8
28	Etihad Airways	Middle East	55.5	16.2
29	Japan Airlines	Asia Pacific	49.2	2.7
30	Air Berlin	Europe (EU)	48.6	-3.6

Airline	Region	% chg
Turkish Airlines	Europe (non-EU)	23.2
Aeroflot	Europe (non-EU)	19.2
Etihad Airways	Middle East	16.2
Emirates Airline	Middle East	14.2
Qatar Airways	Middle East	12.0
China Eastern	Asia Pacific	10.4
China Southern	Asia Pacific	8.6
Air China	Asia Pacific	8.6
All Nippon Airways	Asia Pacific	6.8
JetBlue Airways	North America	6.8
US Airways	North America	5.1
Thai Airways	Asia Pacific	4.6
British Airways	Europe (EU)	3.9
Ryanair	Europe (EU)	3.8
easyJet	Europe (EU)	3.6
KLM	Europe (EU)	3.2
Japan Airlines	Asia Pacific	2.7
Lufthansa	Europe (EU)	2.3
Air Canada	North America	2.1
American Airlines	North America	1.6
Southwest Airlines	North America	1.5
Singapore Airlines	Asia Pacific	1.4
Delta Air Lines	North America	1.0
Air France	Europe (EU)	0.5
TAM Linhas Aereas	Latin America	0.2
United Airlines	North America	-0.5
Cathay Pacific	Asia Pacific	-0.5
Korean Air	Asia Pacific	-0.7
Air Berlin	Europe (EU)	-3.6
Qantas	Asia Pacific	-4.0

Source: Airline Business August 2014 edition (Left hand table ranked by RPK, right hand table by growth)

Although four of the top five airlines in the ranking by RPK volume are North American, all achieved low growth rates, reaffirming the capacity growth discipline of most US carriers. Once again, the stand-out performer at the top end of the rankings – ranked fourth by both volume and growth is Emirates (+14.2% RPK growth in 2013 versus 2012) which continues to close the gap on the top carriers, being one of the top performers in the global airline scene. Fellow Middle Eastern network carriers Qatar Airways and Etihad Airways also posted impressive growth of +13.7% and +20.3% in 2013, respectively.

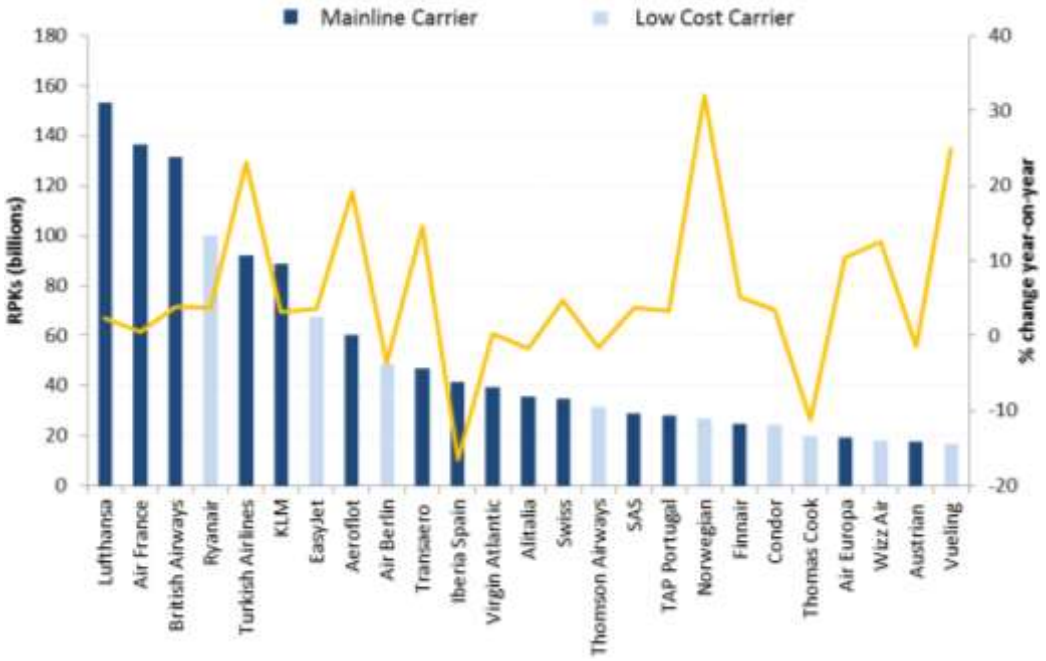
The European majors posted mixed traffic results, with Ryanair and easyJet recording top-European tier growth amongst their European peers, slightly behind British Airways, the best performing for 3rd year in a row with almost +4% RPK growth over 2012. The worst-performing airline in the Top 30 was Qantas (-4%), reducing its RPK due the strategic alliance with Emirates on the transcontinental market and the transfer of domestic and Asia Pacific market in benefit to sister companies Jetstar and Qantaslink, fully owned by Qantas. In wider Europe, both Turkish Airlines (+23.2%) and Aeroflot (+19.2%) achieved impressive passenger growth on the back of strong home markets, following the same pattern as 2012 and in the case of Turkish Airlines expanding its network at both Istanbul airports.

Europe – Major Airlines Growth in 2013

In terms of growth, the major European carriers presented a largely positive story in 2013, where only 11 out of 63 carriers experienced a negative growth. Iberia, former top tier airline became the worst performing airline in Europe, suffering the highest drop in RPKs (-16.5%) due to its -28.8% traffic loss. Ryanair, the region's leading LCC, achieved a +3.8% growth, surpassing the 100 billion RPK mark for first time.

The Russian and Turkish operators outstripped in terms of RPK growth the traditional legacy carriers in Europe, with Turkish Airlines, Aeroflot and Transaero achieving +23.2%, +19.2% and +14.7% growth respectively versus 2012. Norwegian was the region's top performer LCC and airline with an impressive sustained growth of +32%, following +17% in 2012, +25% in 2011 and +30% in 2010.

Figure 1.17: European Airlines RPK Growth in 2013

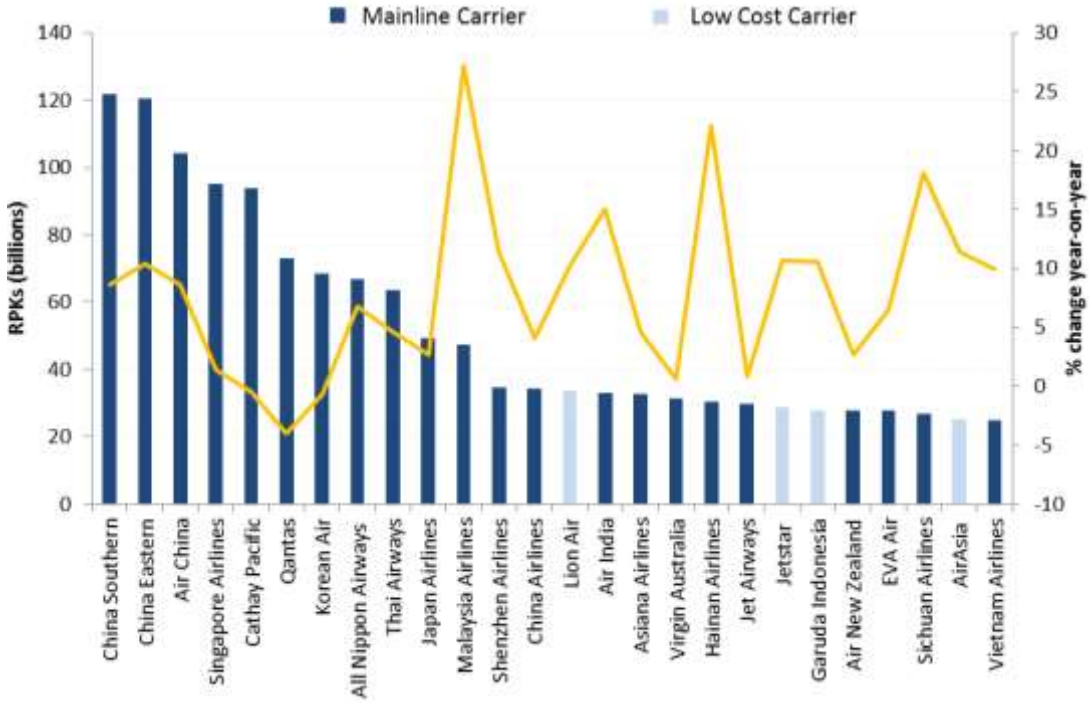


Source: Airline Business August 2014 edition

Asia Pacific – Major Airlines Growth in 2013

The top three Asia Pacific mainline carriers in terms of RPK volumes in 2013 are based in China, reinforcing the position of China as the premier air transport market in the Asia Pacific region. Despite the economic slowdown in 2012, Chinese carriers have bolstered to respectable growth levels. In contrast to Europe, Low Cost Carriers are an emerging force in the region, which will continue to benefit from the growing demand for air travel in developing countries as the effect of Lion Air in Indonesia. However, the fastest growing airlines are still mainline carriers, headed in 2013 by Malaysian Airlines (+27.2%).

Figure 1.18: Asia Pacific Airlines RPK Growth in 2013



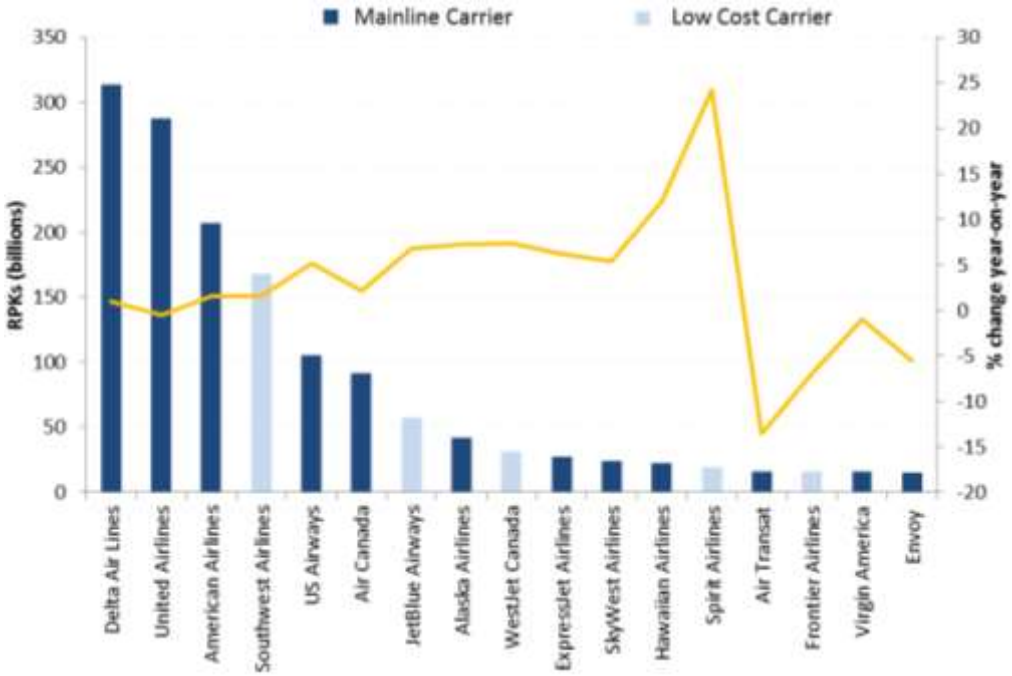
Source: Airline Business August 2014 edition

North America – Major Airlines Growth in 2013

In North America, the US majors are on a different level to most of the other region's mainline carriers in terms of passenger traffic (RPKs).

Of the top five major airlines in the region in terms of RPKs, three recorded passenger declines in 2013 (United-Continental -1.3%; American Airlines -0.1%; Southwest Airlines -1.0%) – at the top of the rankings, Delta remained flat. The majority of the remaining North American carriers in the region experienced reasonable traffic growth. Focussing on the low cost sector in the region, JetBlue Airways (9.3%), Westjet Airlines (8.1%), Virgin America (23.8%) and Spirit Airlines (20.7%) all posted sterling traffic growth. The LCC growth signals a recovery in leisure markets in North America – JetBlue, for instance, earmarked its San Juan (Puerto Rico) base as a cornerstone for expansion in the Caribbean market.

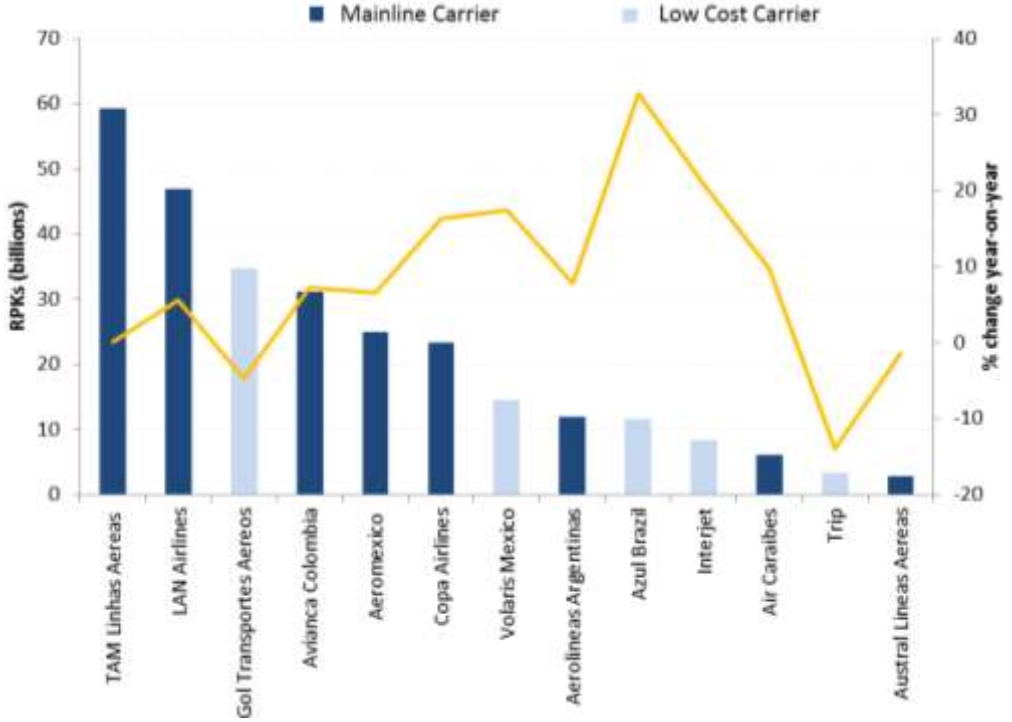
Figure 1.19: North American Airlines RPK Growth in 2013



Source: Airline Business August 2014 edition

Latin America – Major Airlines Growth in 2013

Figure 1.20: Latin American Airline RPK Growth in 2013



Source: Airline Business August 2014 edition

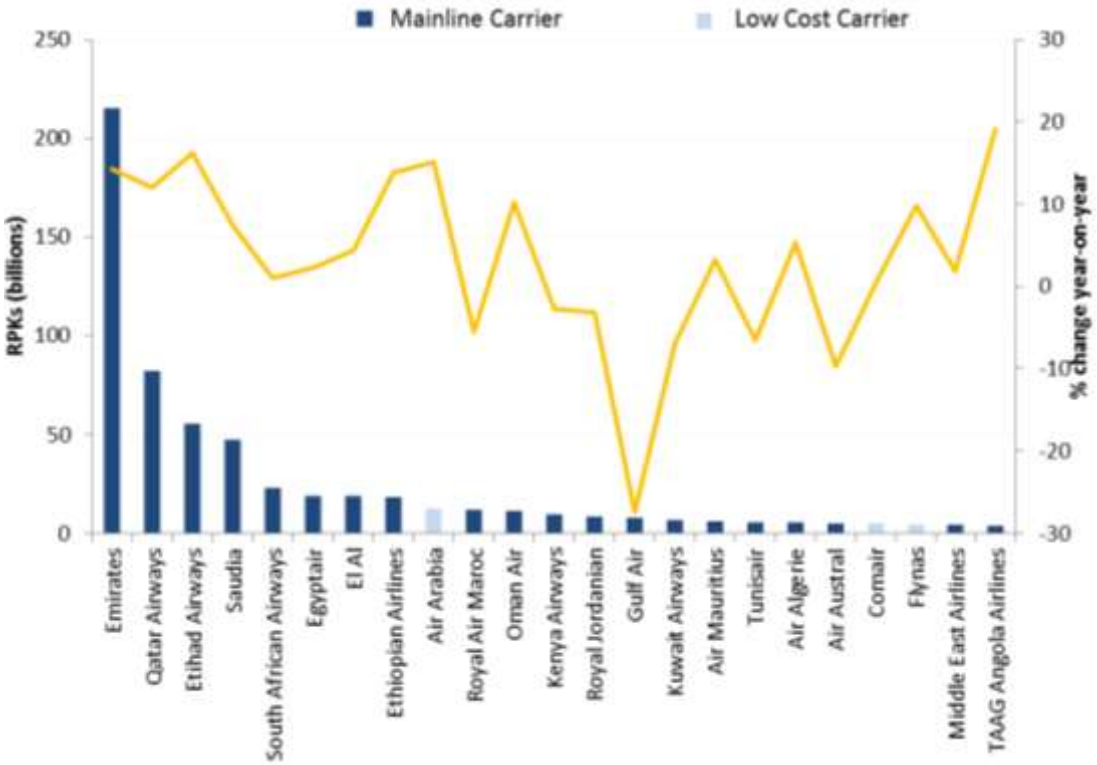
The Chilean airline LAN merged with the Brazilian mainline operator TAM in 2012, forming LATAM airlines. The merger was a key strategy to strengthen their position in Latin America, as the alliance accounts for 38% of the region's total air traffic. However, despite the merger it was only LAN benefiting, experiencing a +5.6% traffic growth change from 2012, whilst TAM only achieved a flat growth of +0.2%. The Brazilian airlines Azul and Trip, which operate domestically, started their merger in 2013, transferring the assets under the Azul brand. The merger resulted in a loss of Trip's air traffic in benefit to Azul (+32.7%). Gol (-4.7%) completes the Brazilian market, reducing considerably from its 2012 numbers (+5.6% growth in 2012).

In Mexico, the two LCC's Volaris (+17.4%) and Interjet (+20.9%), compete to gain market share from the premier Mexican carrier, Aeromexico (+6.5%), and LCC's achieved far greater growth in traffic in 2013 than the network carrier.

Middle East and Africa – Major Airlines Growth in 2013

In the Middle East, Dubai-based Emirates is the dominant airline, and continues growing at a solid double digit paces (+14.2%) against its closest competitors Qatar Airways (+12.0%) and Etihad (+16.2%), all competing in the Hub-and-Spoke market. Gulf Air suffered the largest drop in the region (-27.4%), as effect of Emirates, Qatar Airways and Etihad Airways muscling it out of the long-haul market, resulting in the carrier dropping 8 long-haul routes. In Africa, TAAG Angola Airlines was the best performing airline (+10.1%), benefiting from strengthening its connectivity to China.

Figure 1.21: Middle East and African Airline RPK Growth in 2013



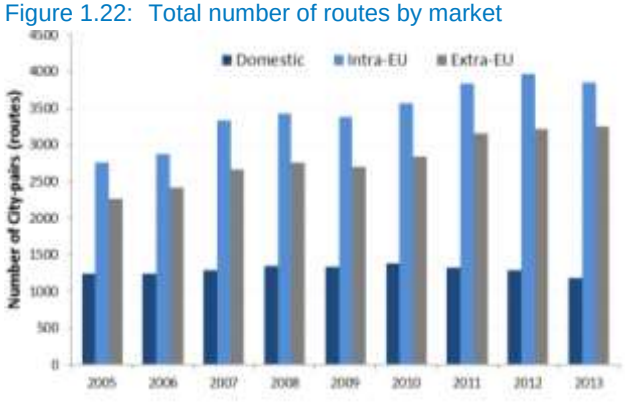
Source: Airline Business August 2014 edition

1.5 European Union (EU28) Route Competition

The level of competition on scheduled routes served from European Union (EU27, with Croatia joining in June 2013) airports has evolved over recent history. An analysis of SRS Analyser airline schedule data for EU airports, for the years 2005 to 2013 on Domestic, Intra-EU and Extra-EU routes, reveals differences by market in the number of carriers operating routes. For this analysis a route is defined as a service between two cities (a city pair).

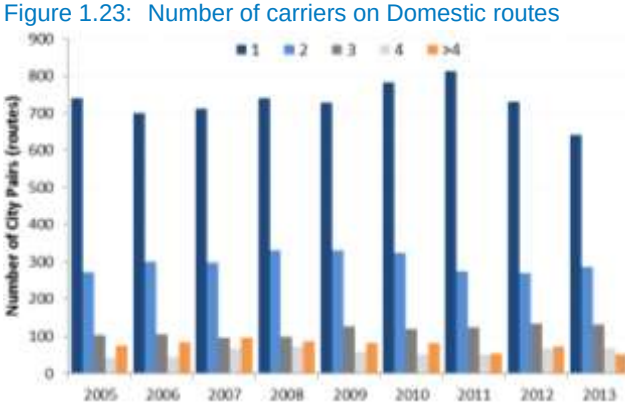
For context, Figure 1.22 shows that growth in the total number of routes served from EU airports has varied by market between 2005 and 2013. Overall, the total number of Domestic routes decreased at an average annual rate of -0.6%, while Intra-EU and Extra-EU routes growth have a staggered profile at an average of +4.3% and +4.6% yearly respectively. However, in 2013 despite increasing air traffic, the total number of Domestic routes within the EU continued to decrease, being a trend since 2010. The increased competition with surface transport modes (particularly high speed rail) across Europe could explain the decline in air travel demand on some shorter distance Domestic and Regional routes, although these will prevail. Intra-EU experienced its first downturn since the economic crisis (2009) and Extra-EU routes continues growing, reflecting other markets strength as Asia and Latin America.

Figure 1.22: Total number of routes by market



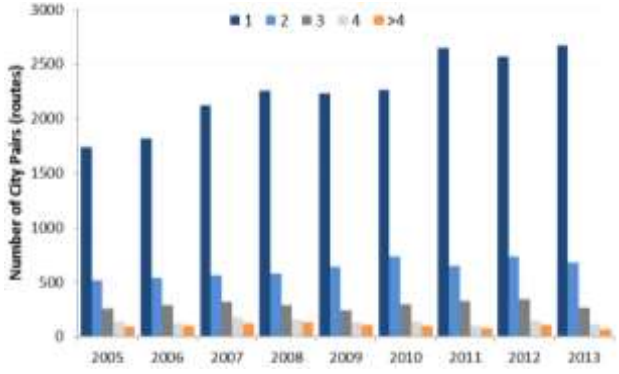
Source: SRS Analyser

Figure 1.23: Number of carriers on Domestic routes



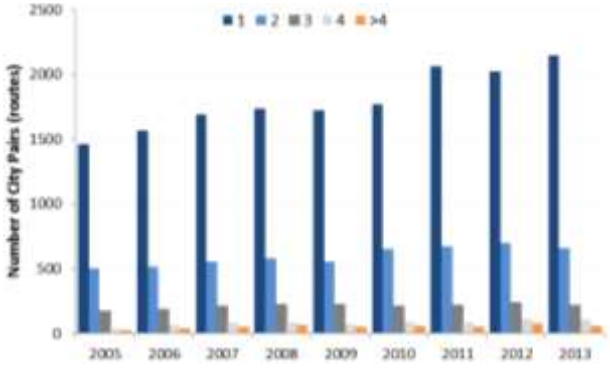
Source: SRS Analyser

Figure 1.24: Number of carriers on Intra-EU routes



Source: SRS Analyser

Figure 1.25: Number of carriers on Extra-EU routes



Source: SRS Analyser

Focussing on competition, Figure 1.23, Figure 1.24 and Figure 1.25 show the number of carriers operating on routes by market. Across all markets, the level of routes with a sole operator in service far outweighs the number of routes where competition exists. Indeed, these routes account for over 60% of the total

across Domestic, Intra-EU and Extra-EU markets, and have remained around this mark between 2005 and 2013. However, despite sole operator routes, being the largest share in all markets, Domestic routes have experienced in the past 2 years the most significant decrease due to surface transport competition, which also impacts all other routes with competition.

In general, growth in the number of routes with a sole operator can be attributed to the amount of 'thin' routes linking smaller markets inside and outside of the expanding European Union where demand can only support the operation of one airline.

A 'flattening' trend can be seen in Intra-EU and Extra-EU throughout the latter years, being a replica of the market tendency. Also, it reflects the adverse economic conditions dampening overall demand for air travel in Europe in general. 2013 suffered a slight downturn compared to 2012 pulling back to 2011 results, but the recovery in the European air transport market highlighted in earlier subsections, reflects a stronger market due to more passengers and higher load factors.

Table 1.12, Table 1.13 and Table 1.14 highlight the share of routes with one carrier, duopoly and oligopoly routes of the total in the three separate markets – Domestic, Intra-EU and Extra-EU.

Table 1.12: Competition on Domestic routes at EU airports - % market share

No. of Carriers	2005	2006	2007	2008	2009	2010	2011	2012	2013	CAGR %
1	60%	57%	56%	56%	55%	58%	62%	57%	54%	-1.8%
2	22%	24%	23%	25%	25%	24%	21%	21%	24%	0.6%
3	8%	9%	8%	7%	10%	9%	9%	11%	11%	2.9%
4	3%	4%	5%	5%	4%	4%	4%	5%	6%	5.9%
>4	6%	7%	8%	7%	6%	6%	4%	6%	4%	-4.7%
≤2	82%	81%	79%	81%	80%	81%	83%	79%	79%	-1.1%
≥3	18%	19%	21%	19%	20%	19%	17%	21%	21%	1.5%

Source: SRS Analyser

Table 1.13: Competition on Intra-EU routes at EU airports - % market share

No. of Carriers	2005	2006	2007	2008	2009	2010	2011	2012	2013	CAGR %
1	63%	63%	64%	66%	67%	64%	70%	66%	70%	5.5%
2	19%	19%	17%	17%	19%	21%	17%	19%	18%	3.4%
3	9%	10%	10%	8%	7%	8%	9%	9%	7%	0.6%
4	5%	4%	5%	4%	4%	4%	3%	4%	3%	-2.2%
>4	3%	3%	4%	4%	3%	3%	2%	3%	2%	-4.1%
≤2	82%	82%	81%	83%	86%	85%	87%	84%	88%	5.0%
≥3	18%	18%	19%	17%	14%	15%	13%	16%	12%	-1.0%

Source: SRS Analyser

Table 1.14: Competition on Extra-EU routes at EU airports - % market share

No. of Carriers	2005	2006	2007	2008	2009	2010	2011	2012	2013	CAGR %
1	66%	66%	65%	65%	66%	64%	67%	64%	68%	4.9%
2	23%	22%	21%	22%	21%	24%	22%	22%	21%	3.4%
3	8%	8%	8%	8%	9%	8%	7%	8%	7%	3.1%
4	2%	3%	3%	3%	3%	3%	3%	3%	3%	12.1%
>4	1%	1%	2%	2%	2%	2%	2%	2%	2%	10.1%
≤2	89%	88%	87%	86%	87%	87%	89%	87%	88%	4.5%
≥3	11%	12%	13%	14%	13%	13%	11%	13%	12%	5.9%

Source: SRS Analyser

Historically, in all of the three markets, routes served by one or two carriers account for the vast majority (almost 90%) of the total.

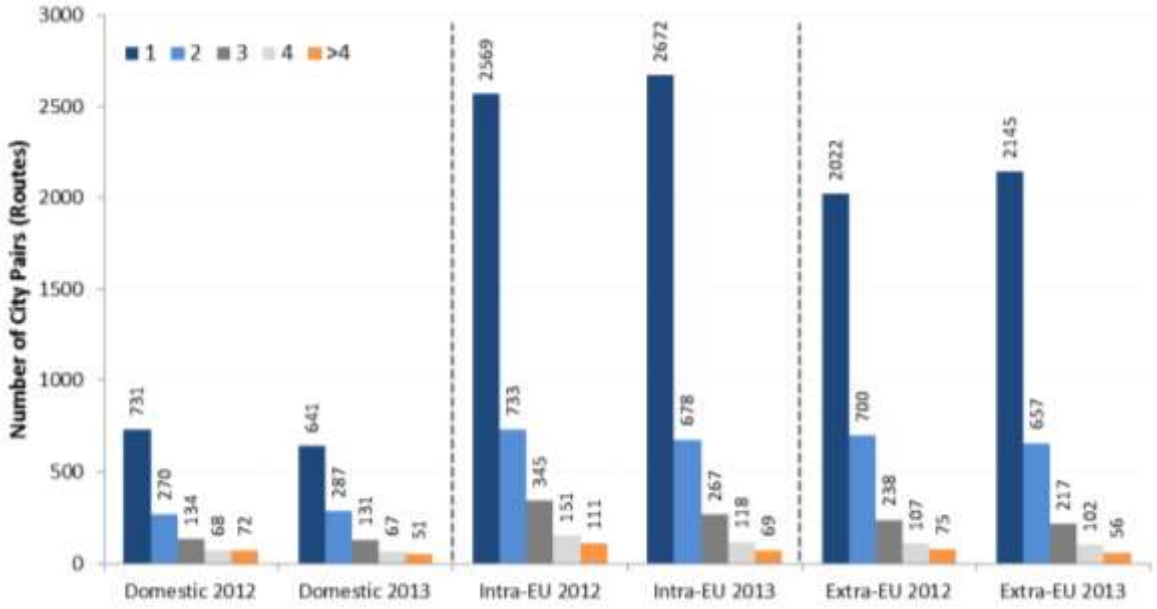
Competition in the Domestic market with one or two carriers, as discussed previously, is decreasing faster (-1.8% CAGR between 2005 and 2013), than on routes with three or more airlines in service (1.5% CAGR). This is a sign that the market is stagnant and it is not aiming to develop further routes, but rather consolidates them.

In the Intra-EU market, the total number of routes has grown faster than in the other markets, an intended consequence of the introduction of the single European air transport market. Figure 1.26 shows that in 2013, there was a rise in Intra-EU routes served by only one airline, recovering from the downturn in 2012, but a marked fall in number of routes with three or more carriers in service. This pattern is repeated in the Extra-EU market, where the number of highly competitive routes has declined in market share relative to the number of routes served by one or two airlines.

At a macro level, the reasons for this can vary. For instance, airline bankruptcies have been a fairly regular feature against the backdrop of European economic troubles, leading to carriers' inability to compete effectively on certain routes that were hitherto very competitive, but could no longer support multiple carriers because of waning demand. The creation of alliances and subsidiary companies has been a strategic decision by carriers to survive the competition. It can also point to an airline policy of new route stimulation being preferable to joining a route with existing competition (particularly the case for the region's LCCs).

The routes with greatest competition are likely to be those routes between the major European centres that create sufficient demand to enable multiple operators to compete for market share using price and product differentiation. Where insufficient air travel demand exists – for instance, between two small urban populations, or connecting a major urban centre with a peripheral community – the level of passenger traffic stimulated may only require one airline to serve that route and sometimes subsidised by government through public service obligation (PSO).

Figure 1.26: Route competition by market, 2013 versus 2012



Source: SRS Analyser

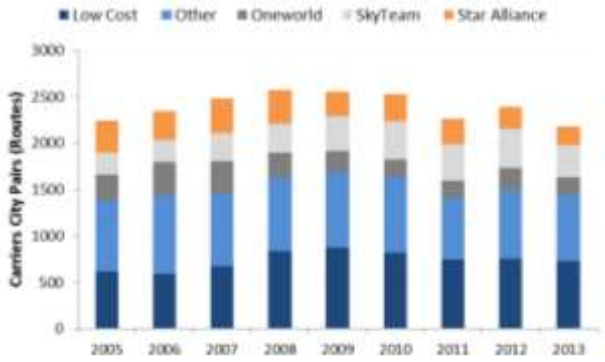
1.6 Trends in Distribution of Supply by Carrier Type

Analysing the distribution of supply by carrier alliance (Star Alliance, Oneworld, SkyTeam, LCCs and Others) reveals some interesting trends. The distinction between Scheduled, Charter and LCCs is unclear and often quoted as arbitrary. The distinction between these airline concepts is increasingly blurred, given the dynamic and changing nature of airline business models, customer propositions and requirements from airports; we thus feel that such segmentation is misleading. Scheduled/LCCs/Charters have increasingly converging business models and airport requirements offering customers similar service. Likewise, scheduled carriers increasingly provide customer offerings which are comparable to the LCC model. For example, in 2013 British Airways introduced at Gatwick a new low price product - i.e. hand baggage only point-to-point fares, to move towards a core cost base similar to LCC levels. Also, depending on the market and season, airlines offer different services (i.e. Germanwings, a LCC, taking over Lufthansa's regional routes).

The figures below show number of routes operated at EU28 airports by type of airline, from 2005 to 2013, by market segment.

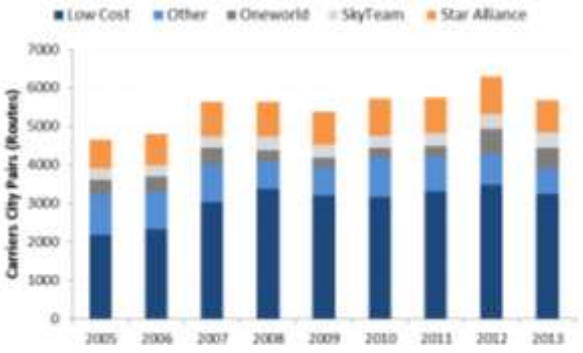
On Domestic and mainly the Intra-EU routes, a trend of Low Cost Carriers competing with and/or usurping Full Service Airlines (Alliance or Others) is evident from the SRS Analyser. A similar trend is exhibited on Extra-EU routes, but not to the same degree, as Full Service Airlines have generally been increasing the number of routes on which they operate, in parallel with a rise in Low Cost activity in this market segment.

Figure 1.27: Domestic routes by carrier type



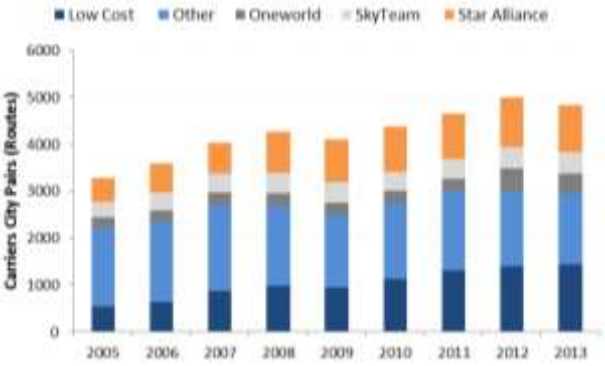
Source: SRS Analyser

Figure 1.28: Intra-EU routes by carrier type



Source: SRS Analyser

Figure 1.29: Extra-EU routes by carrier type



Source: SRS Analyser

Historically since their entrance, the Low Cost Carrier segment has been the major driver of growth across all markets. On Domestic routes, LCCs now compete on 33% of the total, up from 28% in 2005. Market share has been prised from Alliance and other carriers alike (demonstrated in Table 1.15).

Table 1.15: Domestic routes by carrier type - % market share

	2005	2006	2007	2008	2009	2010	2011	2012	2013	CAGR %
Low Cost	28%	25%	27%	32%	34%	33%	33%	31%	33%	2.0%
Other	34%	36%	32%	31%	32%	33%	29%	31%	33%	-0.7%
Oneworld	13%	16%	14%	10%	9%	7%	8%	10%	9%	-4.7%
SkyTeam	10%	10%	12%	12%	15%	16%	17%	17%	16%	4.9%
Star Alliance	16%	13%	15%	14%	10%	12%	12%	10%	9%	-6.6%

Source: SRS Analyser

Table 1.16: Intra-EU routes by carrier type - % market share

	2005	2006	2007	2008	2009	2010	2011	2012	2013	CAGR %
Low Cost	47%	49%	54%	60%	60%	55%	58%	55%	57%	5.0%
Other	22%	20%	17%	12%	13%	18%	16%	13%	11%	-5.7%
Oneworld	8%	8%	8%	5%	5%	4%	5%	10%	10%	5.1%
SkyTeam	7%	6%	6%	6%	6%	6%	6%	6%	7%	3.1%

	2005	2006	2007	2008	2009	2010	2011	2012	2013	CAGR %
Star Alliance	16%	17%	16%	16%	16%	17%	16%	16%	15%	1.5%

Source: SRS Analyser

Table 1.17: Extra-EU routes by carrier type - % market share

	2005	2006	2007	2008	2009	2010	2011	2012	2013	CAGR %
Low Cost	16%	18%	21%	23%	23%	26%	28%	28%	30%	13.1%
Other	51%	48%	45%	40%	38%	37%	37%	32%	31%	-1.3%
Oneworld	7%	7%	7%	6%	6%	6%	6%	9%	9%	8.3%
SkyTeam	10%	10%	10%	10%	11%	9%	9%	9%	9%	4.0%
Star Alliance	16%	18%	16%	21%	22%	22%	21%	21%	21%	8.6%

Source: SRS Analyser

On Extra-EU operations the growth in LCCs has been explosive since 2005, with market share increasing from 16% to 30% in 2013, outstanding any other alliance. However, LCCs largest presence is the Intra-EU market, where in 2013 their market share was of 57% with a 5.0% CAGR since 2005. This implies that LCCs compete on over half the total routes between EU nations. Part of this growth has been at the expense of Full Service carriers, but there has also been a significant stimulation of new demand in this market due to LCC growth (i.e. Secondary airports). If we refer back to subsection 1.5 and the analysis of competition in the Intra-EU market, we can assume that the growth of routes with only one airline in service is primarily due to LCC's opening up new, initially thin routes. This trend is largely repeated in the Extra-EU market.

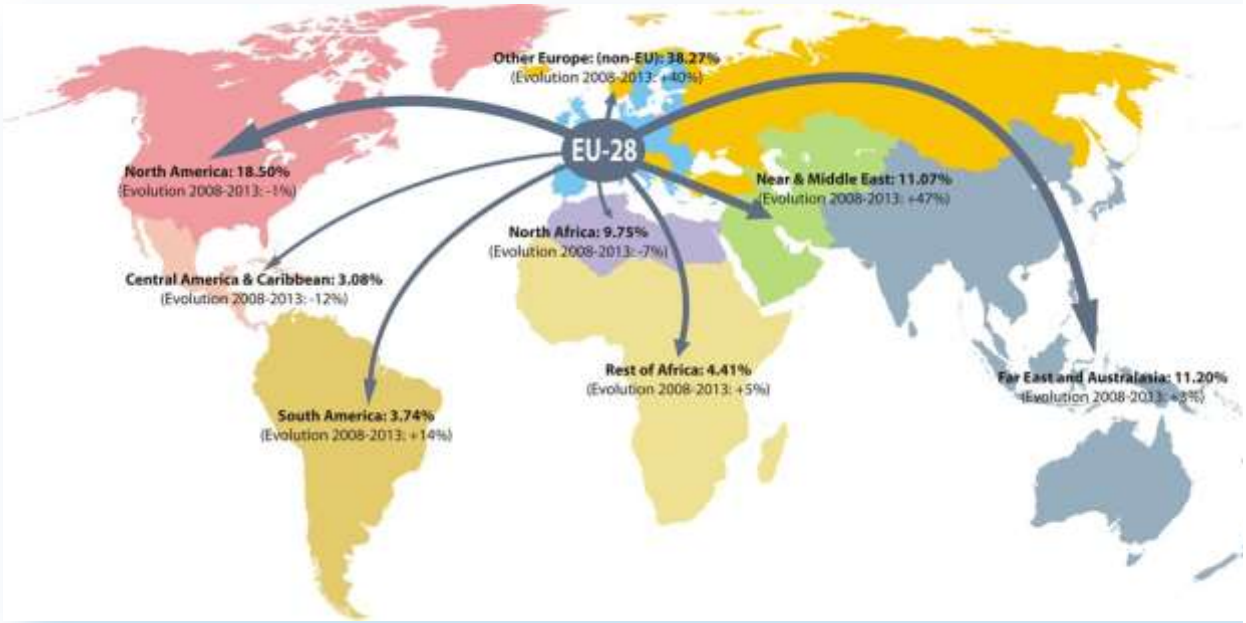
Analysing explicitly the alliances, the most significant change was in 2012, where Niki and Air Berlin joined OneWorld, helping the alliance to escalate their presence in the Intra-EU and Extra-EU markets. Other alliances have addressed the fierce competition of LCC and has started sharing their market with allied companies handling the Domestic and regional market. HOP!, Transavia, Germanwings or Vueling are good examples of the tendency towards employing hybrid carriers on the short to medium-haul routes to face competition.

1.7 European Union Air Traffic Flows

Figure 1.30, on the following page, shows the market share of international passenger flows from the European Union, and the associated growth between 2008 and 2013. EU28 to Other Europe (Non-EU) is the largest Extra-EU market with a 38% share and has grown in real terms by 40% since 2008. The fastest-growing market for air passenger traffic from the EU between 2008 and 2013 was the Near & Middle East, with this market 47% larger than it was in 2008, and its overall share rises slightly above 11% of total Extra-EU air passenger flows. This was mainly due to the Middle-East carriers' hub strategy.

The evolution period (2008-13), as shown in Figure 1.30, includes the economic crisis, which caused a recession in the air traffic. It had a major impact over the period upon the Caribbean (-12%) and North Africa (-7%). The North Africa decline reflects in part the region's political and social instability.

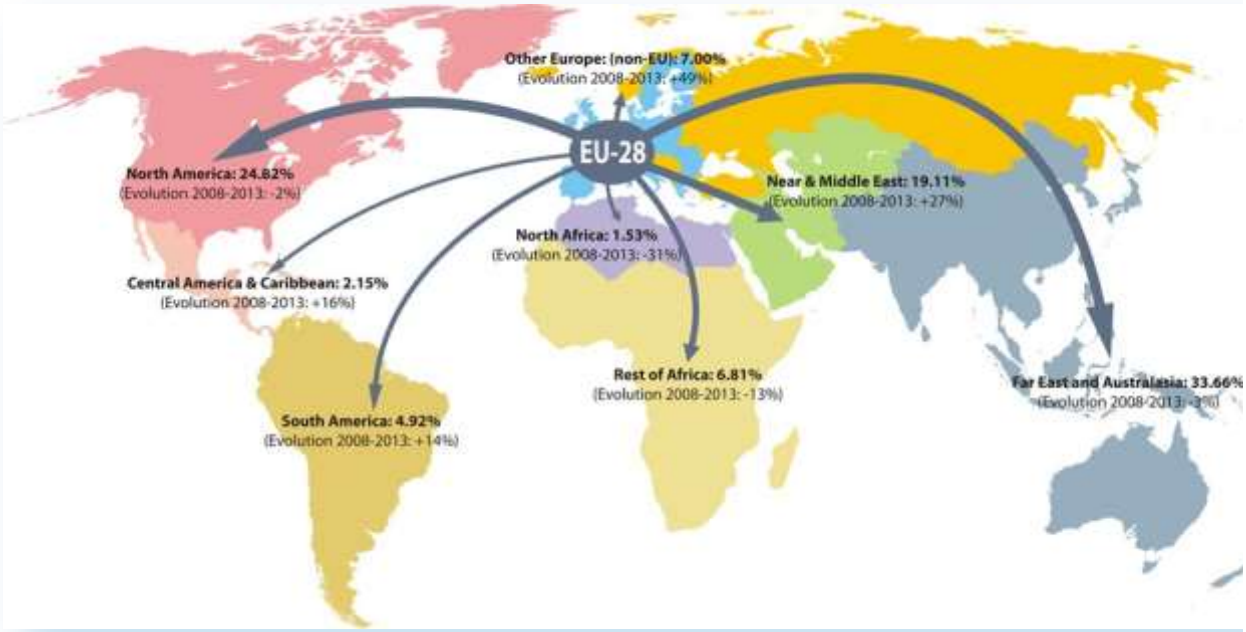
Figure 1.30: EU-28 worldwide passenger traffic flows



Source: Eurostat

Figure 1.31, following, illustrates the market share of international air cargo traffic flows from the EU. Unsurprisingly, Asia-Pacific (Far East and Australasia) is the dominant market – being the global manufacturing centre – commanding almost 34% share, though reducing by -3% between 2008 and 2013. The fastest-growing market for air cargo, however, is Other Europe (Non-EU), increasing by 49% since 2008, and gaining market share to represent 7% of the total Extra-EU air cargo market.

Figure 1.31: EU-28 worldwide air cargo traffic flows



Source: Eurostat

1.8 Major Carriers at EEA airports

Table 1.18 displays the top 25 carriers ranked by available departing seat capacity at EEA airports in 2013. According to SRS Analyser, the airline supplying the highest seat capacity at EEA airports in 2013 was the Irish Low Cost Carrier, Ryanair, offering over 96.9 million seats, growing capacity +0.8% over 2012. Ryanair sits at the top of the rankings by some distance, dominating the intra-European market with bases across the region, and shows no signs of abating the expansion. Fellow LCC,easyJet, achieved slightly higher growth to Ryanair in 2013 in providing over 60 million seats. Although not at the same scale as these two major LCCs, Norwegian also posted strong growth (+15.4%) on the back of expansion in UK–Norwegian launched in late 2012 its new hub in London Gatwick and expansion into long-haul destinations. Staying with the regions' LCC's Vueling recorded another outstanding growth in 2013 (+11.5%). Vueling's departing seat capacity at Spanish airports accounts for over three quarters of its EEA total (39%).

Table 1.18: Departing seat capacity by airline at all reporting EEA airports, 2012 vs 2013

				Departing Seats (millions)		
	Carrier	Country	Carrier Type	2012	2013	% chg
1	Ryanair	Ireland	Low Cost	96.2	96.9	0.8%
2	easyJet	UK	Low Cost	59.5	61.6	3.5%
3	Lufthansa	Germany	Full-Service	56.7	58.0	2.2%
4	Air France	France	Full-Service	43.8	41.8	-4.7%

	Carrier	Country	Carrier Type	Departing Seats (millions) 2012	2013	% chg
5	British Airways	UK	Full-Service	36.1	40.0	10.8%
6	Scandinavian Airlines (SAS)	Sweden / Denmark / Norway	Full-Service	33.3	32.8	-1.4%
7	Air Berlin	Germany	Full-Service	31.8	30.5	-4.3%
8	Norwegian Air Shuttle	Norway	Low Cost	24.0	27.6	15.4%
9	Alitalia	Italy	Full-Service	25.4	22.0	-13.3%
10	Vueling Airlines	Spain	Low Cost	19.1	21.3	11.5%
11	KLM	Netherlands	Full-Service	17.0	17.8	4.3%
12	Iberia	Spain	Full-Service	18.9	12.5	-34.1%
13	FlyBE	UK	Low Cost	13.9	16.2	16.2%
14	Wizz Air	Hungary	Low Cost	13.3	13.8	4.2%
15	Aer Lingus Limited	Ireland	Full-Service	12.3	13.3	8.3%
16	Lufthansa CityLine	Germany	Regional	10.7	11.6	8.7%
17	Tyrolean Airways	Austria	Regional	8.8	12.4	40.3%
18	TAP Portugal	Portugal	Full-Service	9.6	10.3	6.6%
19	Germanwings	Germany	Regional	9.1	10.7	18.2%
20	Thomson Airways	UK	Leisure	9.7	9.1	-6.5%
21	Air Europa	Spain	Full-Service	8.5	8.7	2.1%
22	KLM Cityhopper	Netherlands	Regional	8.5	8.5	0.2%
23	Aegean Airlines	Greece	Full-Service	7.6	7.7	0.9%
24	Finnair	Finland	Full-Service	8.1	6.9	-15.2%
25	Turkish Airlines	Turkey	Full-Service	7.1	7.7	8.8%

Source: SRS Analyser
Nb: Note that SRS Analyser reports all subsidiary airlines are mentioned separately

In the Full-Service airline segment, there were strong performances in 2013 for British Airways (10.8% growth 2013 versus 2012), Aer Lingus (8.3%), and Turkish Airlines (8.8%), as it continues to increase its presence at EEA airports and provided nearly 8 million departing seats in this bloc in 2013. The Turkish carriers' policy of providing access to its Istanbul hub from European airports has seen the airline expand operations in key markets such as Germany, Italy and the UK, as well as smaller emerging markets in Scandinavia and Hungary for instance. Regionally, Tyrolean is the airline experiencing the largest growth (40.3%), which is due to the operations transfer from Austrian Airlines.

The poorest performing airlines in the Top 25 in 2013 included Spanish airline Iberia (-34.1%); the Finnish national airline, Finnair (-15.2%); Italy's flag carrier, Alitalia (-13.3%); and UK leisure operator Thomson Airways (-6.5%). Iberia, which has been losing market share in the latter years, is facing strong competition on the local and regional market, mainly by Vueling, which is now part of the IAG Group. That has forced to switch strategy and focus on its long-haul market, mainly Latin America and transfer the regional market to its subsidiary Iberia Express.

1.9 Air Cargo Traffic Growth

1.9.1 Air Cargo by Global Region

This section addresses trends in air cargo (belly cargo and full-freighters) traffic growth in 2013 rather than reporting on absolute numbers due to publicly sourced data from IATA.

Table 1.19: Summary of Air Cargo Traffic growth by Region in 2013 vs 2012

	Africa	Asia Pacific	Europe	Latin America	Middle East	North America	Industry
Freight Tonne Kilometres (FTKs) % chg 2013 v 2012	1.0%	-1.0%	1.8%	2.4%	12.8%	-0.4%	1.4%

Source: IATA

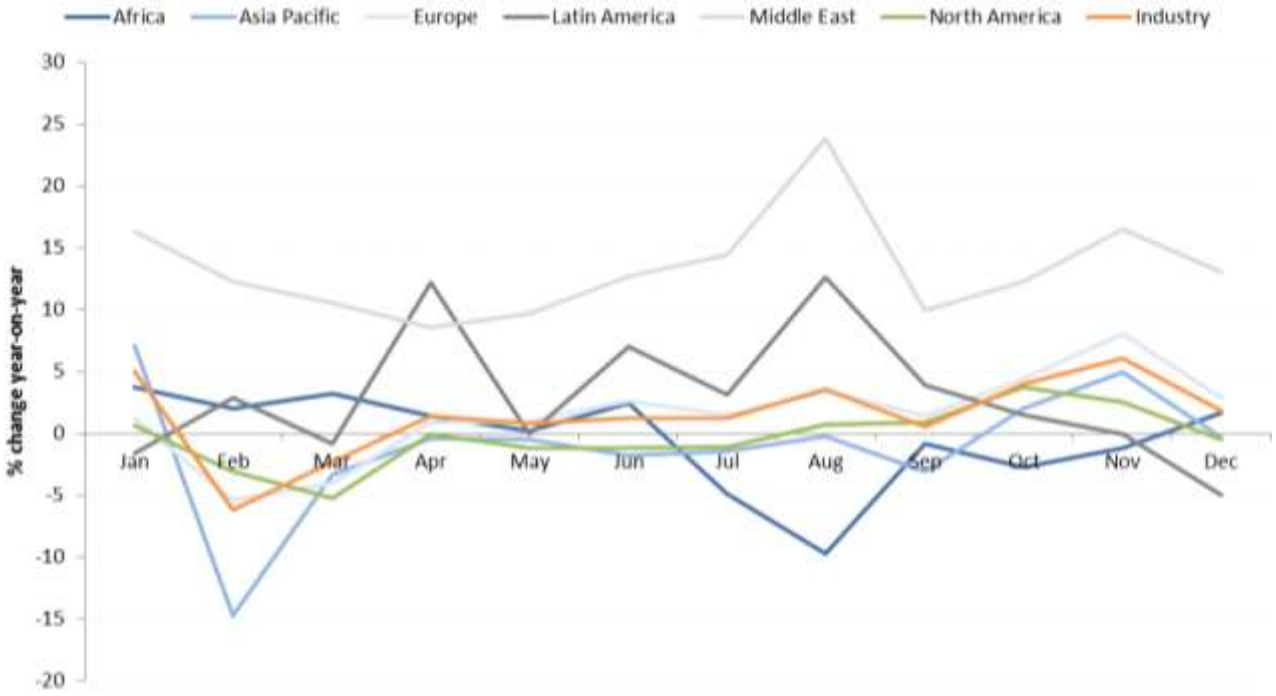
According to IATA, its member airlines collectively recorded a growth in air cargo traffic – measured in Freight Tonne Kilometres (FTKs) – of +1.4% in 2013 over 2012 levels, resurfacing after two years of decline. The modal swift from air to maritime and rail has been thus continuing to cut air cargo growth. In addition, the economic trend to onshore manufacturing is affecting air freight as well as time delay due to goods restriction and/or great need of safety and security.

Airlines in all regions have been continuously affected by the swings in the freight market. Middle East carriers have been the only ones witnessing constantly positive FTK growth, growing on average of +12.6% per annum in the past nine years. This is principally the effect of the region's airlines wide-body aircraft (non-full freighters) capacity growth.

The worst affected region was Asia Pacific, with airlines seeing a -1.0% contraction in air cargo traffic in 2013. In terms of global trade, Asia Pacific is a major manufacturing centre and source of outbound cargo to keys markets in Europe and North America. Companies manufacturing offshore has tended to move production closer to its markets, easing supply chain and exiting from Asia Pacific's steady economic growth.

Figure 1.32 shows the monthly pattern of air cargo traffic growth across 2013. As noted above, the Middle Eastern carriers recorded a strong performance across the year. Asia Pacific airlines experienced a significant downturn in February due to the Chinese New Year holiday mismatches yearly, where shipments are postponed or advanced.

Figure 1.32: Freight Tonne Kilometre (FTK) Growth by Region 2013 vs. 2012



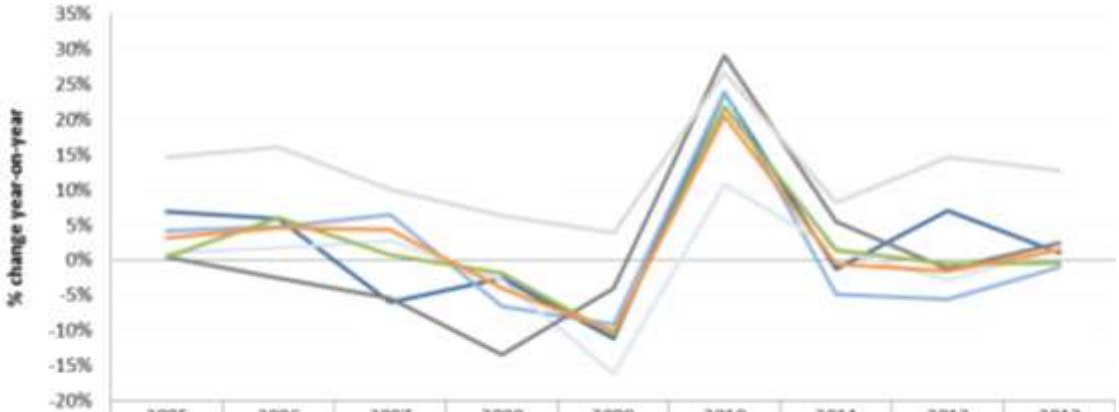
Source: IATA

The industry average is heavily influenced by the Asia Pacific results, as this region's airlines represent a 38.8% share of the air cargo market in 2013.

Figure 1.33 shows the historical growth of air cargo carried on airlines by global region. Since 2005, Middle Eastern airlines have consistently outperformed the industry average in terms of air cargo growth rates achieved. This is primarily due to the region's emergence and consolidation as an international transit hub between Asia and Europe. Airlines such as Emirates, Etihad and Qatar Airways serving the Middle Eastern airport hubs have a high proportion of wide-body aircraft fleet with greater capacity to carry cargo.

Although 2010 experienced a strong spike in demand growth, this is merely a recovery to pre-economic air cargo levels following poor growth in 2008 and 2009. The industry average since 2010 has trended downwards, due in large part to weak demand for outbound air cargo in Asia Pacific from the Western markets.

Figure 1.33: Historical Air Cargo Growth by Region 2005-2013



	2005	2006	2007	2008	2009	2010	2011	2012	2013
Africa	6.9%	5.9%	-6.0%	-2.5%	-11.2%	23.8%	-1.2%	7.1%	1.0%
Asia Pacific	4.2%	4.7%	6.5%	-6.6%	-9.2%	24.0%	-4.8%	-5.5%	-1.0%
Europe	1.1%	1.7%	2.7%	-2.8%	-16.1%	10.8%	1.5%	-2.9%	1.8%
Latin America	0.5%	-2.6%	-5.4%	-13.5%	-4.0%	29.1%	5.5%	-1.2%	2.4%
Middle East	14.6%	16.1%	10.1%	6.3%	3.9%	26.7%	8.2%	14.7%	12.8%
North America	0.4%	6.0%	0.7%	-1.9%	-10.6%	21.8%	1.5%	-0.5%	-0.4%
Industry	3.2%	4.6%	4.3%	-4.0%	-10.1%	20.6%	-0.6%	-1.5%	1.4%

Source: IATA

1.9.2 Air Cargo by Worldwide Airport

Table 1.20: Top 30 Worldwide Airports by Air Cargo Throughput (000's tonnes) & Growth in 2013 illustrates the general weak demand for air cargo across the globe as ten of the world's Top 30 airports suffered declines in 2013 versus 2012.

Global airport cargo throughput is also indicative of where the main trade flow growth is focussed. The Top 30 worldwide airports by air cargo throughput, as reported by ACI, are dominated by Asia Pacific – accounting for 44% of the top 30 airports' combined volume in 2013. Three of the top five airports in 2013 are in the Asia Pacific region, where only Shanghai declined in comparison with 2012 (-0.3%), which proceeded from a -4.7% in 2012 versus 2011. Also, despite Dubai being the strongest cargo airport in the Middle East by far, Abu Dhabi is growing its share, achieving an outstanding +24.1% growth in 2013 mainly because of Etihad's increase (Freight tonne km change +35.8%).

In Europe, Leipzig experience the largest growth (+3.8%) followed by Amsterdam (+3.6%). On the downside, Paris Charles de Gaulle was experiencing the largest drop (-3.6%) of the EU airports.

Table 1.20: Top 30 Worldwide Airports by Air Cargo Throughput (000's tonnes) & Growth in 2013

Rank	Airport Name	Region	2013	% chg
1	Hong Kong (HKG)	Asia Pacific	4,166	2.4%
2	Memphis TN (MEM)	N. America	4,138	3.0%
3	Shanghai (PVG)	Asia Pacific	2,929	-0.3%
4	Incheon (ICN)	Asia Pacific	2,464	0.3%
5	Dubai (DXB)	Middle East	2,436	6.8%
6	Anchorage AK (ANC)	N. America	2,421	-1.7%
7	Louisville KY (SDF)	N. America	2,216	2.2%
8	Frankfurt (FRA)	Europe (EU)	2,094	1.4%
9	Paris (CDG)	Europe (EU)	2,069	-3.8%
10	Tokyo (NRT)	Asia Pacific	2,020	0.7%
11	Miami FL (MIA)	N. America	1,945	0.8%
12	Singapore (SIN)	Asia Pacific	1,886	0.8%
13	Beijing (PEK)	Asia Pacific	1,844	2.4%
14	Los Angeles CA (LAX)	N. America	1,747	-1.9%
15	Taipei (TPE)	Asia Pacific	1,572	-0.4%
16	Amsterdam (AMS)	Europe (EU)	1,566	3.6%
17	London (LHR)	Europe (EU)	1,515	-2.6%
18	Guangzhou (CAN)	Asia Pacific	1,310	4.9%
19	New York NY (JFK)	N. America	1,295	0.8%
20	Bangkok (BKK)	Asia Pacific	1,236	-8.1%
21	Chicago IL (ORD)	N. America	1,229	-2.0%
22	Indianapolis IN (IND)	N. America	991	7.5%
23	Tokyo (HND)	Asia Pacific	954	4.9%
24	Shenzhen (SZX)	Asia Pacific	913	6.9%
25	Doha (DOH)	Middle East	883	4.6%
26	Leipzig (LEJ)	Europe (EU)	878	3.8%
27	Cologne (CGN)	Europe (EU)	717	-1.8%
28	Kuala Lumpur (KUL)	Asia Pacific	713	1.6%
29	Abu Dhabi (AUH)	Middle East	712	24.1%
30	Osaka (KIX)	Asia Pacific	682	-5.6%

Airport Name	Region	% chg
Abu Dhabi (AUH)	Middle East	24.1%
Indianapolis IN (IND)	N. America	7.5%
Shenzhen (SZX)	Asia Pacific	6.9%
Dubai (DXB)	Middle East	6.8%
Tokyo (HND)	Asia Pacific	4.9%
Guangzhou (CAN)	Asia Pacific	4.9%
Doha (DOH)	Middle East	4.6%
Leipzig (LEJ)	Europe (EU)	3.8%
Amsterdam (AMS)	Europe (EU)	3.6%
Memphis TN (MEM)	N. America	3.0%
Hong Kong (HKG)	Asia Pacific	2.4%
Beijing (PEK)	Asia Pacific	2.4%
Louisville KY (SDF)	N. America	2.2%
Kuala Lumpur (KUL)	Asia Pacific	1.6%
Frankfurt (FRA)	Europe (EU)	1.4%
Singapore (SIN)	Asia Pacific	0.8%
Miami FL (MIA)	N. America	0.8%
New York NY (JFK)	N. America	0.8%
Tokyo (NRT)	Asia Pacific	0.7%
Incheon (ICN)	Asia Pacific	0.3%
Shanghai (PVG)	Asia Pacific	-0.3%
Taipei (TPE)	Asia Pacific	-0.4%
Anchorage AK (ANC)	N. America	-1.7%
Cologne (CGN)	Europe (EU)	-1.8%
Los Angeles CA (LAX)	N. America	-1.9%
Chicago IL (ORD)	N. America	-2.0%
London (LHR)	Europe (EU)	-2.6%
Paris (CDG)	Europe (EU)	-3.8%
Osaka (KIX)	Asia Pacific	-5.6%
Bangkok (BKK)	Asia Pacific	-8.1%

Source: ACI Worldwide Airport Traffic Report

1.10 Business Aviation

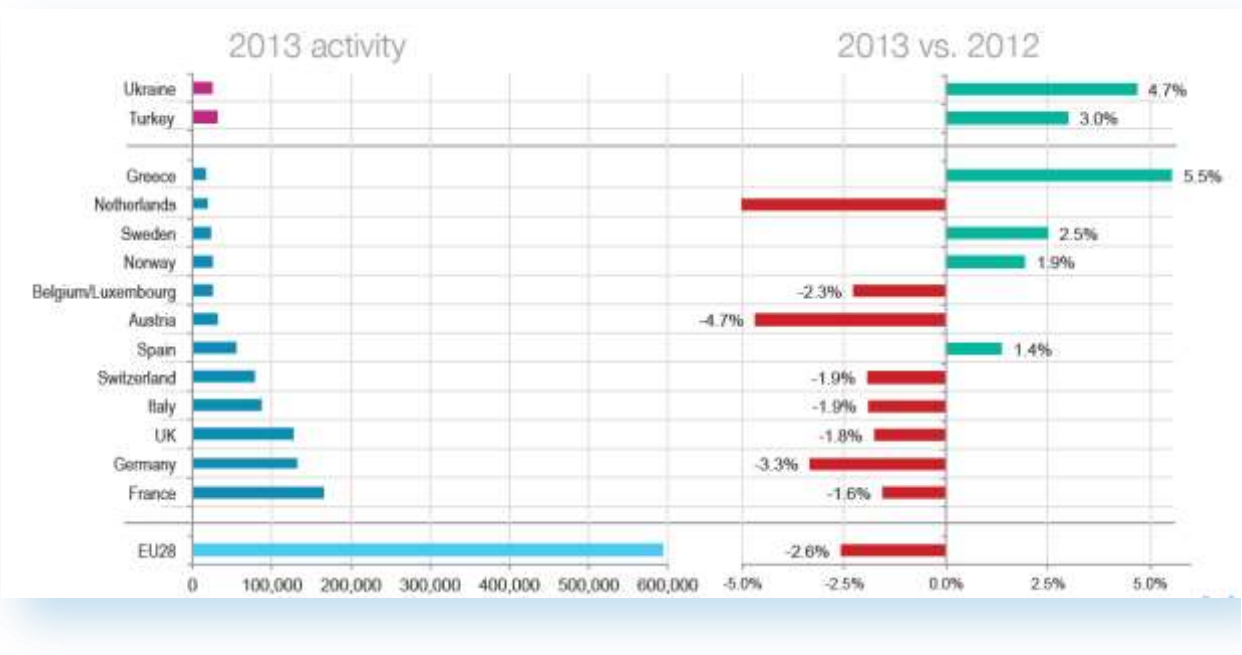
1.10.1 Europe Overview

According to EBAA[6], business aviation in Europe in 2013 recorded a decline of 0.9% on average, based on total departing flights of business aviation aircraft types in EU27 (Croatia not considered). France, Germany and the United Kingdom combined accounted for more than 60% of all business aviation

[6] EBAA Air Traffic Figures December 2013

departures in EU27 in 2013, as highlighted in Figure 1.34, though all of them have experienced decrease. Spain and Greece's growth, despite economic predicaments, is related to previous year's abysmal results and any positive variation is interpreted as growth.

Figure 1.34: States' share of European business aviation departures in 2013



Source: EBAA, EUROCONTROL/EBAA/WINGX

Of the top ten business aviation airports in Europe, Nice and Farnborough were unique in 2013 in reporting positive growth (+3.6% and 1.1% respectively). This fact, together with the slight decrease of aircraft (3,128 in 2013) which has not happened since 2009, reflects the scene of depressed demand across the region, which has not started to recover yet, but seems to be adjusted and stabilized. In fact, since August 2013, market has been above monthly year-on-year stats.

The busiest business aviation airport on the continent, Paris Le Bourget, saw activity decline by 3.9%. The Italian airports Ciampino and Linate recoded the lowest results in top ten business airports with a -6.1% and -6.0%. And outside of the top ten, Kiev-Zhulyany (+29.8%) kept up with the trend to continue post solid growth after 2012 results where it doubled operations.

2. Air Transport Forecasts

2.1 Introduction

In this chapter we provide an overview of the projected future growth in passengers, cargo and air transport movements over the next twenty year period. The analysis of future aviation developments is crucial for medium and long-term infrastructure capacity planning and for increasing the efficiency of the aviation system.

The forecasts presented in this chapter are obtained from the most recent and publicly accessible respected industry sources, which provide an outlook of the expected aviation trends at a regional level

The chapter is organised by first examining forecasts of Gross Domestic Product (GDP), widely recognised as the primary driver of air transport demand. The ICAO short term passenger forecast is analysed, followed by long term passenger forecasts based primarily on the latest versions (2014) of Boeing's Current Market Outlook[7] and Airbus Global Market Forecast[8]. Forecasts of air transport movements are then analysed (based on Eurocontrol's Flight Movement Forecast), followed by the review of Boeing's air cargo estimates to 2035.

2.2 Review of GDP forecast

Economic development and prosperity are the principal drivers for the underlying demand for air transport, with GDP and its growth being the main measurement of economic activity for econometric-based air transport forecasts.

IHS Global Insight, a major economic forecasting organisation, produces a GDP forecast which is used by aircraft manufacturers such as Boeing, Airbus, Embraer and Bombardier. According to IHS, global GDP will grow on average 3.2 % per annum between 2013 and 2033. As shown in Figure 2.1 the strongest contributors to this growth are two of the BRIC[9] countries, India and China, delivering GDP growth double the world average. Interestingly, the Asia Pacific area, after removing the effect of the two BRIC countries growth, is expected to have a rate of growth lower than other regions. Compared to the previous 2012 forecast, China's growth has been reviewed downward, from 6.6% to 6.2%.

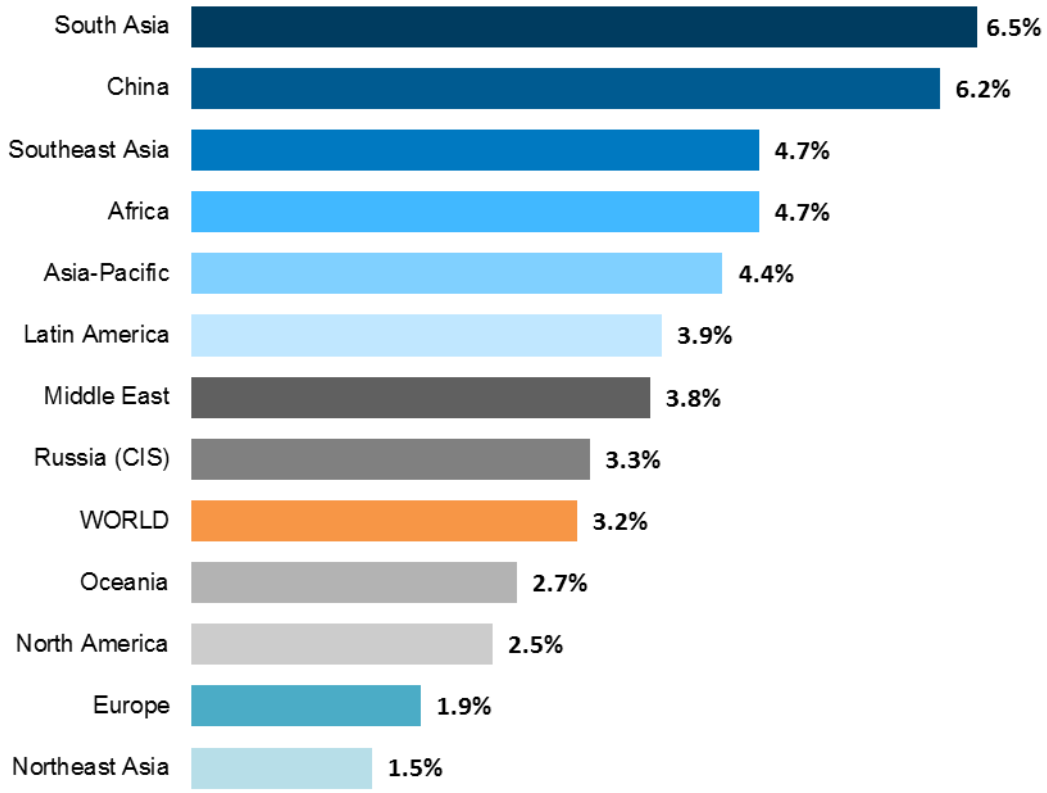
Europe and North America, the most mature air transport markets, show modest growth below the world average over the forecast horizon. Africa, Latin America and the Middle East economies are forecasted to expand above the world average.

[7] Current Market Outlook 2014-2033, The Boeing Company 2014 (released June 2014)

[8] Global Market Forecast 2014-2033 Airbus Industrie 2014 (released October 2014)

[9] The acronym BRIC refers to the nations of Brazil, Russia, India and China; commonly viewed as leaders in economic growth.

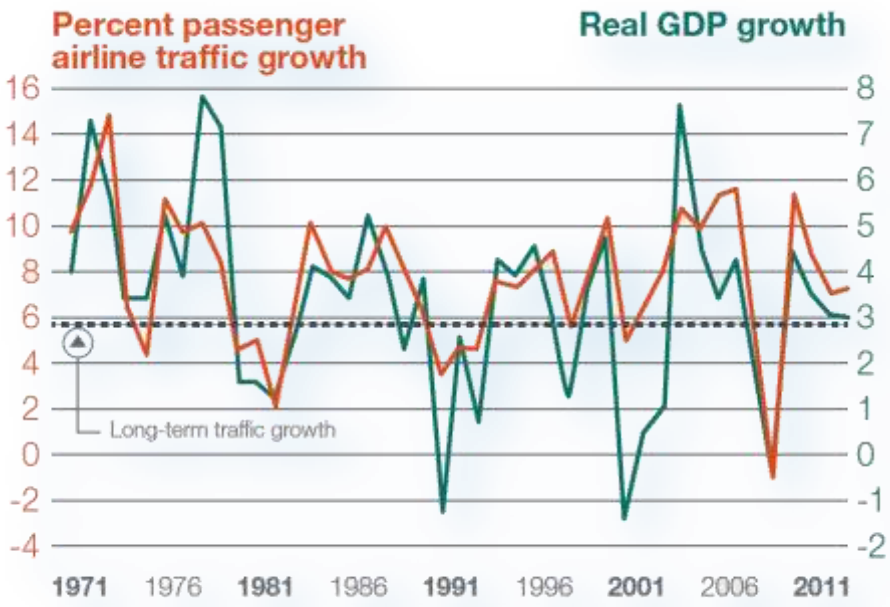
Figure 2.1: Average Annual GDP Growth 2013-2033



Source: Boeing/Global Insight

The relationship between demand for air transport and GDP growth is broadly acknowledged. A visual representation of the pattern of revenue passenger kilometres (RPK) and GDP, as shown in Figure 2.2 below emphasises the correlation between the measures. Air transport demand is often measured in RPK. This is a measure of the number of fare paying passengers multiplied by the number of kilometres flown.

Figure 2.2: Change in Global GDP (constant) vs. Change in Passenger Traffic (RPK) 1971-2011

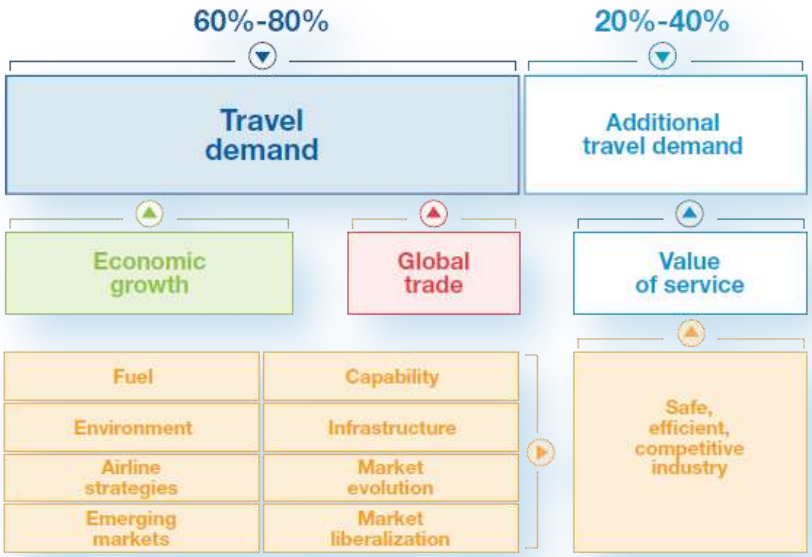


Source: Boeing

GDP is not the exclusive variable factor for the explanation of variation in air transport main KPIs (passengers, aircraft movements and cargo traffic). Aircraft manufacturer forecasts consider a number of other factors which are related to the variations in demand. Some of these supplementary factors influencing demand are related to economic activity (for example the rapid urbanisation resulting from the rise of the middle classes in emerging economies), other drivers are based on operational and political developments, such as the further adoption of the low cost carrier (LCC) business model or the continued liberalisation and deregulation of air transport markets.

The interrelationships of these factors and their role in driving long term air transport growth and the preparation of industry forecasts are shown below in Figure 2.3.

Figure 2.3: Drivers of Air Travel Demand



Source: Boeing

According to Airbus, the main drivers for growth over the forecast period 2012 to 2032 are considered to be[10]:

- Growth of aviation mega-cities due to urban population growing from 51% today to 60%, producing more wealth and increasing the propensity to travel.
- Economic growth driven by emerging markets: more first time flyers and an expanding middle class which will grow from 2.2 billion today to 5.2 billion.
- Growth in tourism which will stimulate air travel demand.
- Liberalisation of air transport markets in Asia, Africa and Latin America.
- Replacement of old models with more eco-efficient aircraft.
- The low cost model is expected to grow in the Asia Pacific and Africa regions

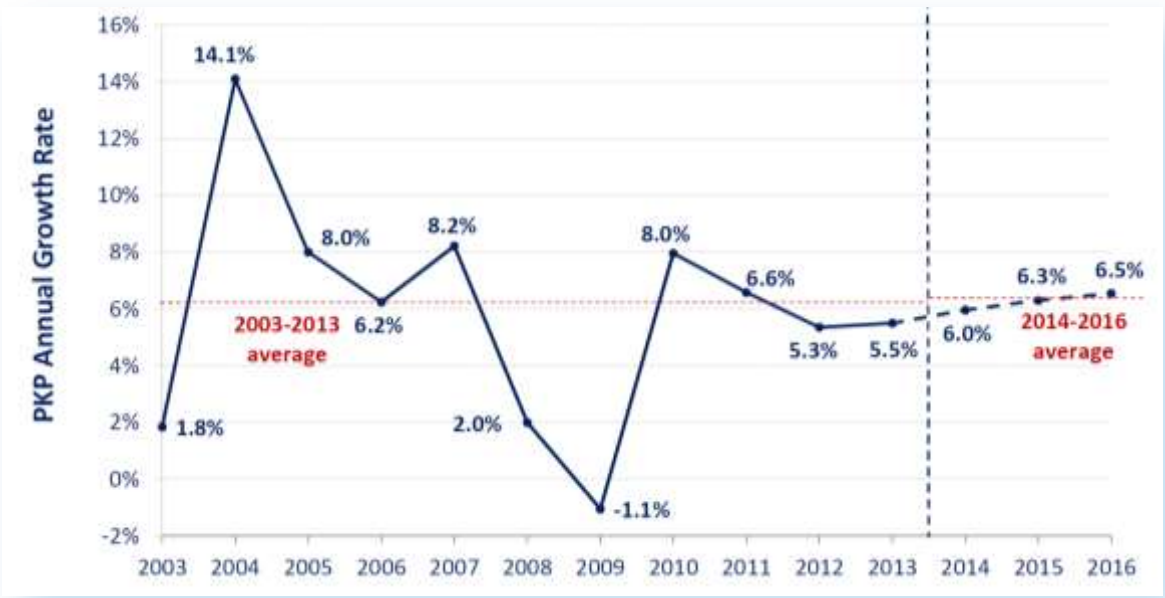
2.3 Medium Term Forecast

Global scheduled air passenger traffic, in terms of PKP, is expected to grow by 6.0 per cent in 2014, a slight upturn from the 5.5 per cent growth rate recorded in 2013. According to IHS/Global Insight, world Gross Domestic Product (GDP) in real terms would grow by 2.9 per cent in 2014, up from 2.5 per cent in 2013.

[10] Airbus Global Market Forecast 2012-2032

The forecast traffic is derived from the prevailing economic conditions at a regional level and as such vary by geographic region. Looking at Table 2.1, the Middle East is projected to be the fastest growing region, attributable to its carriers' performance with ever-increasing market share gains. The Middle East is followed by Latin America, Asia Pacific and Africa. Europe is projected to grow faster than North America, albeit this growth will be slower than in the emerging markets.

Figure 2.4: ICAO – World PKP Historic and Medium Term Forecast Percentage Change



Source: ICAO Medium Term Forecast 2013

Table 2.1: ICAO – PKP Annual Growth Rates Forecast

Region of Airline Registration	History		Forecast		
	2012 (%)	2013* (%)	2014 (%)	2015 (%)	2016(%)
Europe	4.8	4.6	5.4	5.7	5.9
Africa	2.2	4.4	4.8	5.9	6.3
Middle East	14.3	11.2	11.6	12.1	12.3
Asia Pacific	6.7	7.7	7.2	7.4	7.5
North America	1.6	2.0	2.7	3.1	3.3
Latin America/Caribbean	9.0	6.7	8.9	8.2	8.6
World	**6.3**	**5.5**	**6.0**	**6.3**	**6.5**

Source: ICAO Medium Term Forecast 2014 *May 2014 Preliminary figures

2.4 Long Term Airline Passenger Forecasts

2.4.1 Global Airline Passenger Growth

In this section we examine the long term airline passenger forecasts published by the aircraft manufacturers Boeing and Airbus. Both have produced a broad long term global market forecast for the period 2014 to 2033 using 2013 as the base year. Boeing and Airbus employ similar methodologies to form the forecast. At an aggregate level the two sets of predictions are largely comparable with each other. However, there are some key differences between the two manufacturers' forecasts, which will be discussed in this section; influence the estimate results at a macro level.

In its 2011 market outlook, Boeing's forecast for 2030 was for 13.3 trillion RPK worldwide. The 2013 analysis produced by the American manufacturer predicts 15.5 trillion RPK by 2033. The average annual growth rate is similar but revised downward marginally (5.1% in 2011 versus 5.0% in 2014). Airbus points out historic trends indicate that (since the 1970s) air traffic has doubled every fifteen years and is anticipated to continue to do so up until the year 2028. Today, the most recent Airbus forecast predicts average annual RPK growth of 4.7% between 2013 and 2033, matching its previous projection of 4.7%. Boeing remains slightly more optimistic with a 5.0% average annual growth rate projected between 2013 and 2033.

Table 2.2: Boeing & Airbus Forecast Comparison

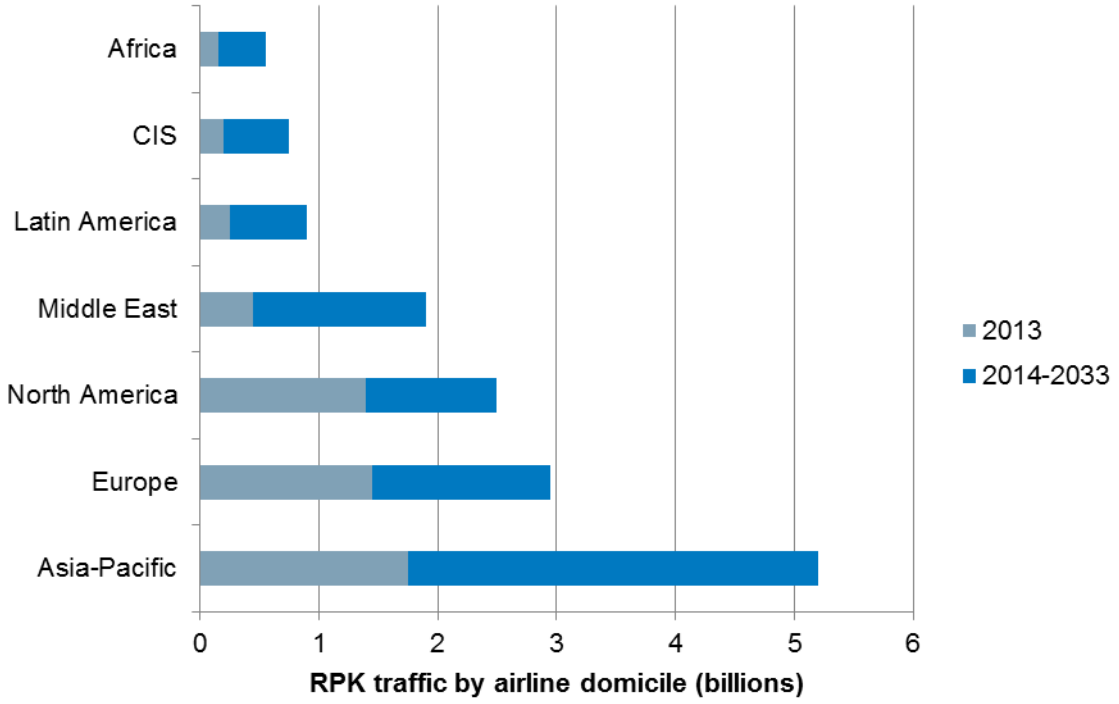
	Boeing	Airbus
RPK (trillion) 2013	5.9	5.5
RPK (trillion) 2033	15.5	13.9
Total Growth 2013 – 2033	163%	151%
Average Annual Growth Rate	**5.0%**	**4.7%**

Source: Boeing, Airbus

2.4.2 Airline Passenger Growth by World Region

According to Airbus data, over the forecast period, growth in airline passenger traffic is in line with regional economic development (Figure 2.5). By far, the fastest growing region is the Middle East, expected to grow at an average of 7.1% per annum and achieve circa 2 billion RPK traffic per year by 2033. China and India, two of the four largest economies in the world are expected to grow. In turn, this will aid the Asia Pacific region to strengthen and sustain its market leading position on passenger RPKs within the next two decades. By 2033, the region is expected to achieve in excess of 5 billion RPK.

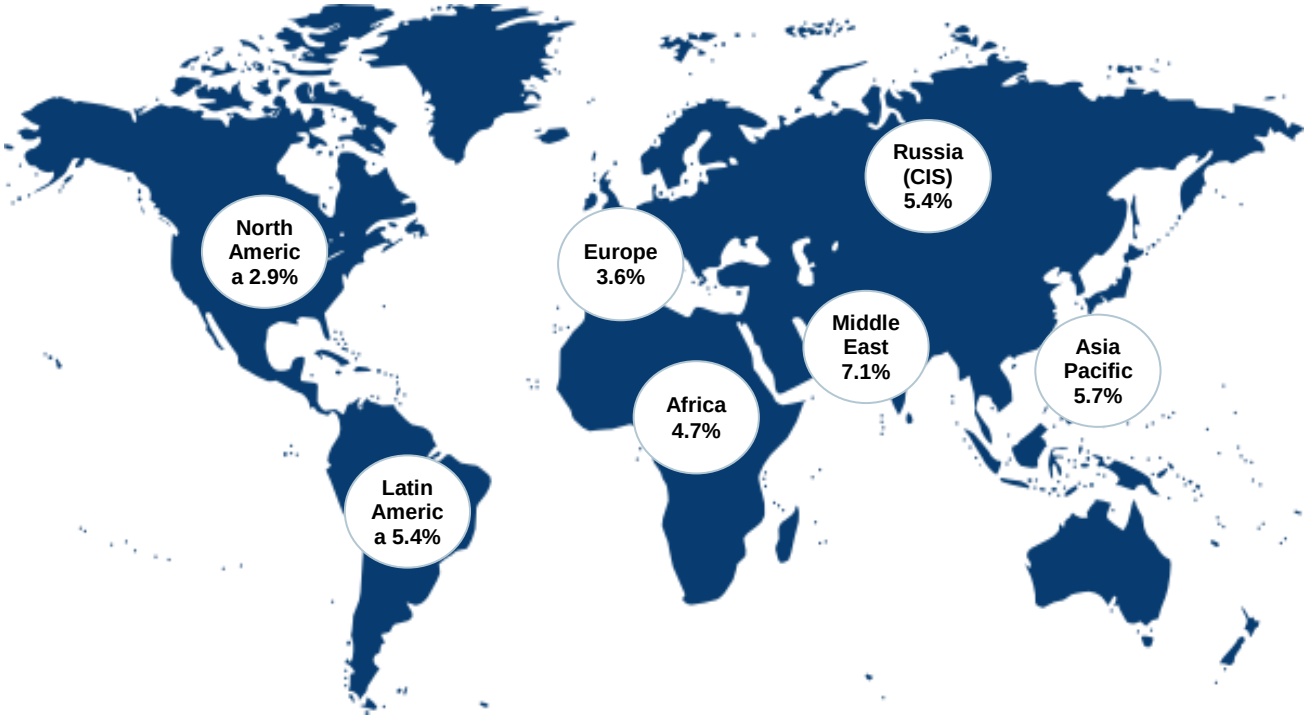
Figure 2.5: RPK traffic by airline domicile



Source: Airbus

Figure 2.5 represents 20-year annual growth rate estimates by Airbus for each of the world regions. As noted earlier, the Middle East leads the way with a compound annual growth rate of 7.1%, significantly above the 20-year world annual traffic growth of 4.7%. The mature markets, Europe and North America, are predicted to grow at 3.6% and 2.9%, respectively. Both regions struggle to keep up with the much quicker growth in Middle Eastern and Asia Pacific markets but still, collectively, represent over a third of world RPK by 2033 (albeit down from the 49% they represent in 2013). Asia Pacific, alone, will have a 36% share in world RPK, up from the 30% it holds in 2013. Airbus predicts over 50% of new routes over the next 20 years will connect to Asia Pacific, which acts as testament to its 5.2 billion RPK by 2033. World RPK is expected to double by 2029.

Figure 2.6: World Airline Traffic Growth (RPK billions and annual average growth rates) 2014-2033



Source: Airbus

2.4.3 Inter- and Intra-Regional Traffic Flow Growth

The Boeing Current Market Outlook provides a breakdown of inter- and intra-regional RPK forecast growth. In Figure 2.7 a diagram of the major flows is presented. Within the circles is the expected intra-regional RPK growth between 2013 and 2033. The arrows indicate the percentage growth on inter-regional traffic flows.

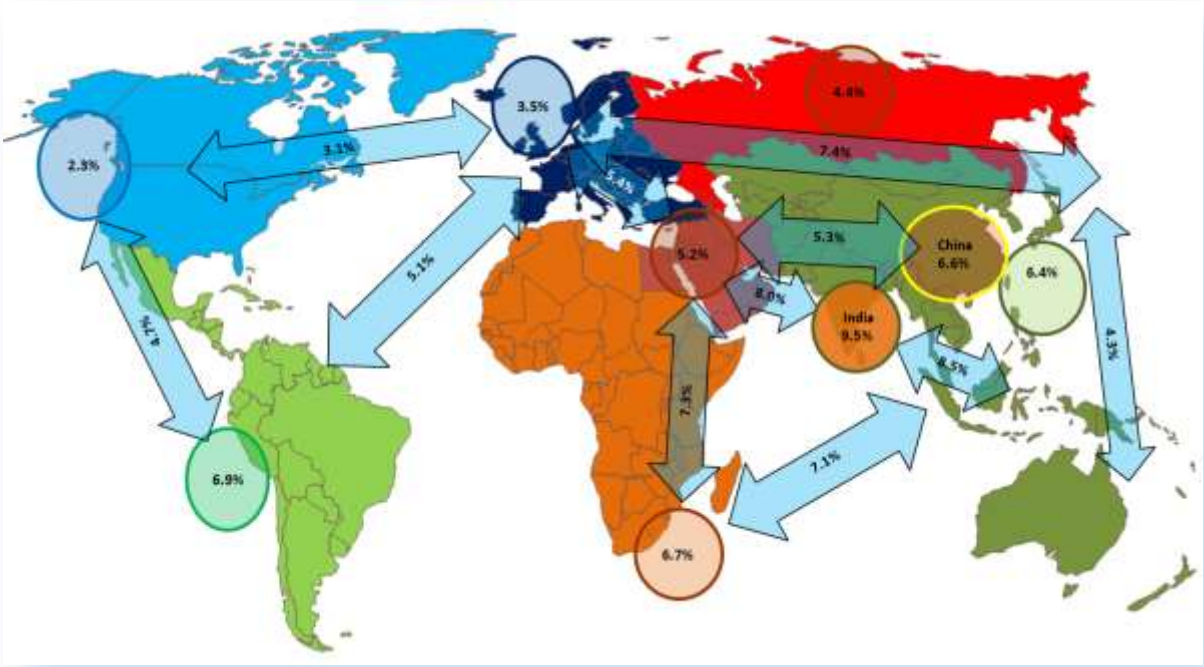
The forecast growth in RPK in the next twenty years is concentrated in traffic to, from or within the Asia Pacific region (including China). When China not include in growth rates for traffic within Asia Pacific, the aggregate growth rate is 6.4%. However when China is measured separately, it accounts for a growth rate of 6.6%.

The lowest RPK growth is expected in the intra-North America market. The forecasted RPK growth is of 2.3%. The comparison of these figures with the previous Boeing market outlook indicates that relative growth in these rates has been detected for Asia Pacific, Latin America and Middle East regions.

In the previous Boeing forecast the highest RPK growth for inter-regional traffic flows was attributed to the Southeast Asia-South Asia market, followed by the Middle East-South Asia segment (8.4%). In this forecast, the highest rate of forecast growth on inter-regional traffic flows is still predicted to be on Southeast Asia-South Asia routes (8.5% per year), followed by Southeast Asia-Middle East routes at 8.0%

per year. Figure 2.7 represents the primary intra & intra-regional RPK annual average growth rates between the years 2014 and 2033 as forecast by Boeing.

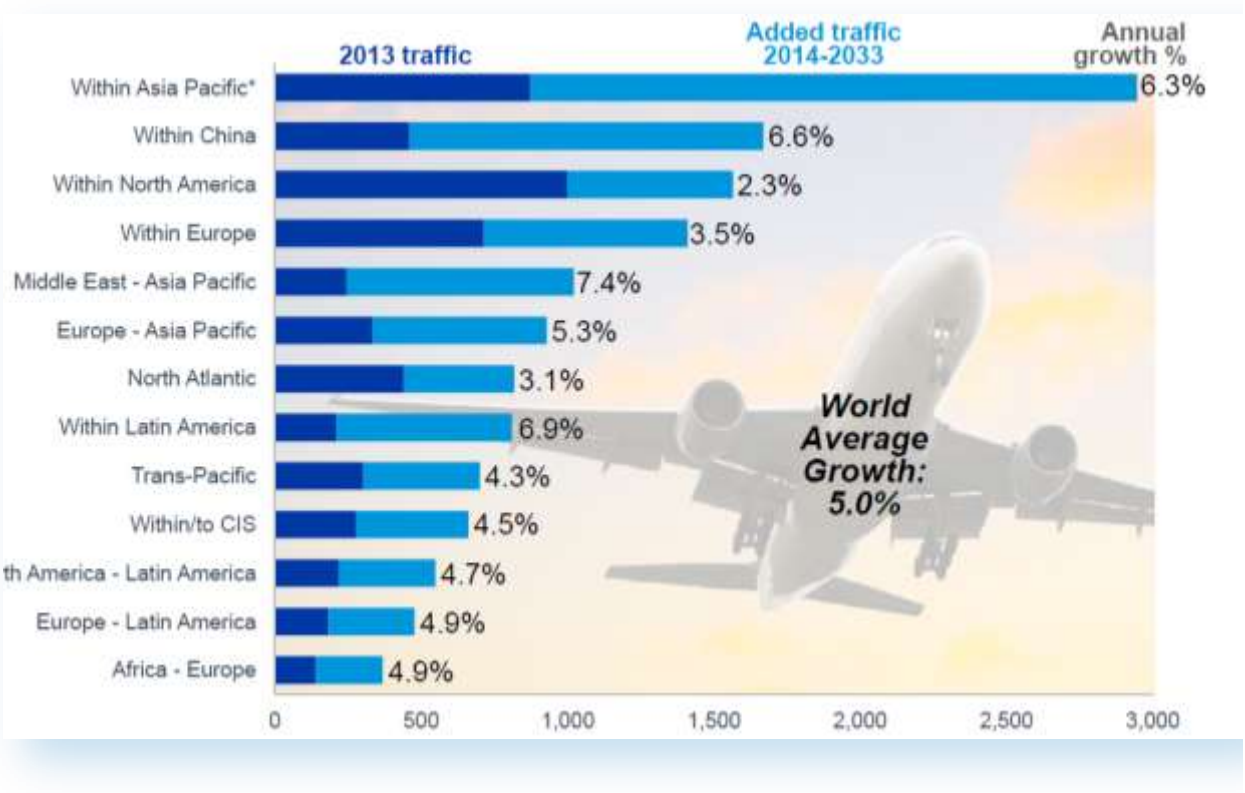
Figure 2.7: Intra & Inter-Regional RPK annual average growth rates 2014-2033



Source: Boeing

Figure 2.8 emphasises how the Asia Pacific region, in absolute RPK terms, is projected to retain leading market status in the future.

Figure 2.8: Intra & Inter-Regional Traffic RPKs 2014-2033



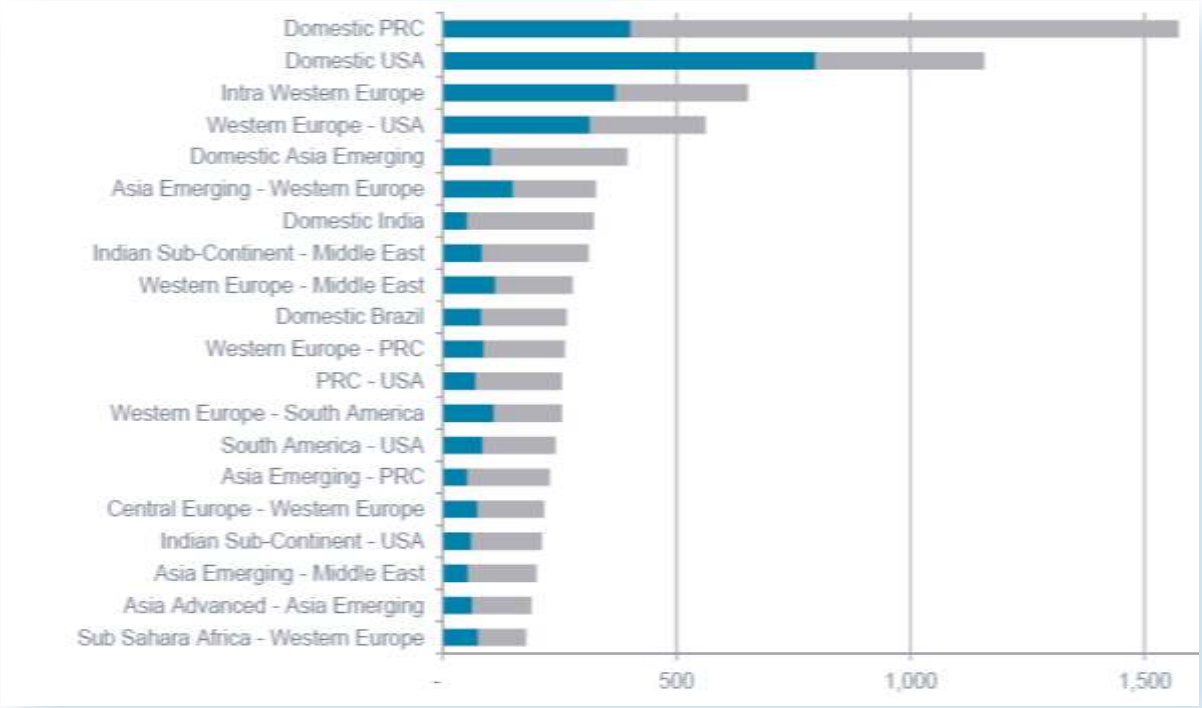
Source: Boeing

Regional Flows

In its latest Global Market Forecast for the period 2014 to 2033, Airbus has examined traffic flows and provided data for traffic routes at a detailed level. From this data the largest overall flows by volume can be determined.

In terms of the largest traffic flows in absolute volume, domestic China will overtake the domestic U.S. market. Intra Western Europe remains the next largest passenger market (Figure 2.9).

Figure 2.9: Largest 20 Traffic Flows in 2033 (RPK, billions)



Source: Airbus

2.4.4 Trends in Europe

As illustrated earlier in Figure 2.6, it is projected that Europe's passenger traffic will rise at an annual compound rate of 3.6% until 2033, reaching just under 3 trillion RPK. This is an upward revision of the European market which, in the previous forecast, was estimated to grow to 2.35 trillion by 2030.[11] The global economic downturn has had a detrimental effect on the European economy as a whole since it began in 2008 yet Airbus project a positive future for European passenger traffic. This is largely down to the plethora of positive economic developments in the region across the past twelve months alongside rising consumer and business confidence and rapidly improving export markets. Moreover, the IHS Global Insight GDP forecast for Europe for the years 2012 to 2032 estimate a 2% annual increase against 1.9% projected between 2010 and 2030, thus emphasising the increased confidence in improving economic conditions going forward.

2.4.5 IATA Long Term Forecast

In collaboration with Oxford Economics, IATA released its first 20-year passenger growth forecast in October 2014 which predicts global passenger numbers to reach 7.3 billion by the year 2034. Worldwide average annual growth will be 4.1%, which itself translates to more than a doubling of the 3.3 billion passengers expected to travel in 2014. China is expected to overtake the United States as the world's

[11] Airbus Global Market Forecast 2014-2033

largest passenger market (defined by traffic to, from and within) by 2030 and adopt the title of fastest-increasing market in terms of additional passengers per year (865 million new passengers per annum). The U.S. is anticipated to achieve 559 million passengers per year between now and 2030, closely followed by India (266 million), Indonesia (183 million) and Brazil (170 million). IATA outlines living standards, population and demographics, and price and availability as the three key drivers of this global demand and the subsequent doubling of passenger traffic within the next two decades.

The European air transport passenger market is expected to see the slowest rate of growth between 2014 and 2034 at 2.7% per annum. Despite this, the region will still cater for an additional 591 million passengers per year, meaning the European market as a whole will reach 649 million passengers per annum. Inside Europe, the UK will see an additional 148 million passengers per year until 2034, taking the British market to a total of 337 million passengers. Germany and Spain are predicted to decline from 5th and 6th position in 2014 to 8th and 7th largest markets, respectively. Similarly, both France and Italy are projected to see a decline in their air transport passenger markets. By 2019, France will fall from 7th to 10th whilst Italy is forecast to fall out of the top 10 altogether.

2.5 EUROCONTROL Flight Movement Forecasts

The STATFOR (Statistics and Forecasting) section of EUROCONTROL regularly produces short, medium and long term flight movement forecasts for European airspace.

It should be noted that EUROCONTROL's forecasts produce outputs as measured by air transport movements, or more specifically, IFR movements. Aircraft operating under instrument flight rules (IFR) are those flying in controlled airspace under regulations and procedures which allow the flight crew to navigate solely by reference to cockpit instruments and radio navigation aids.

The vast majority of commercial passenger and cargo air transport flights operate using an IFR flight plan. However, there are many other types of flights operating under IFR in Europe which cannot be typically characterised as commercial airline services, such as business jets, military transport, training flights and some light aircraft (General Aviation) flights.

Using IFR movements as a measurement of aviation activity provides a useful overview from an operational standpoint. Rather than measuring absolute numbers of passengers or RPK, examining IFR movements allows for the analysis of overall aircraft operational activity within European airspace, therefore helping to determine its pressures, demands, capacity and constraints. This in turn is useful for planning improvements and efficiencies in the aviation system; essential for projects such as SESAR, Clean Sky JTI, the Emissions Trading Scheme and airport infrastructure and capacity. The forecasts do not however consider aircraft size, or average numbers of passengers per flight.

2.5.1 The Short Term Forecast

A EUROCONTROL state-level forecast for 2014 is shown in Figure 2.10. According to this base case scenario the economic outlook in Europe appears to have slightly improved since the previous forecast which was finalised in September 2013. Traffic in Europe is expected to recover to a moderate rate of 1.2% in 2014, a 0.2% pp downwards revision compared to the September forecast explained by a lower

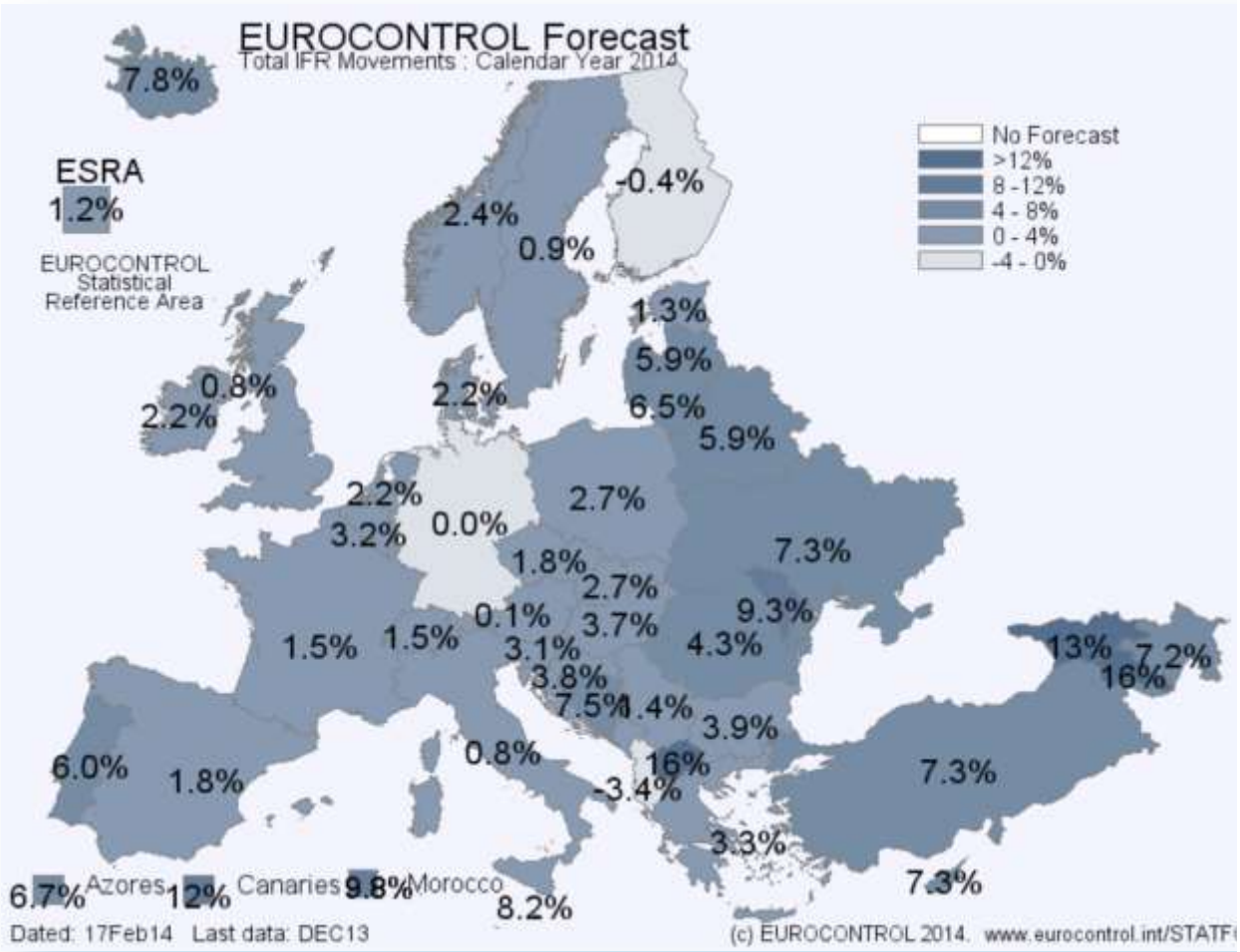
than expected growth in the Schedules. However, the improvement is not consistent and some states continue to look fragile.

Statistics by state for 2015 are presented in Figure 2.11, showing an increase in traffic in Europe by 2.7%, a 0.1 pp upwards revision from the previous forecast. Traffic growth rates are expected to be more homogeneous across Europe.

The short-term forecast is influenced by a number of factors and events:

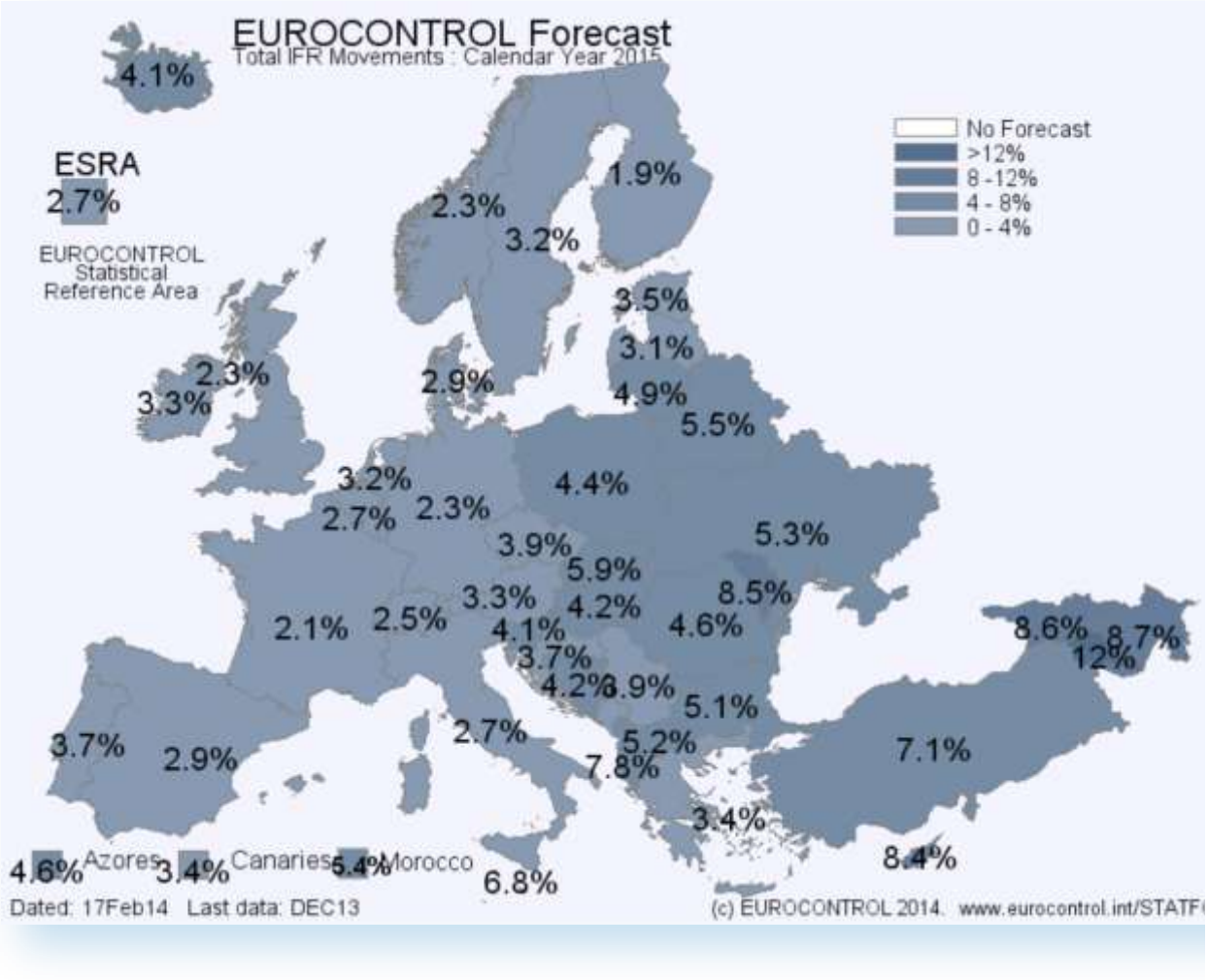
- Weak economic outlook combined with the mixed traffic trends since the beginning of the Winter schedule
- Capacity depended growth due to load factors being at consistently high levels during the past four years. European airlines are still cautious with adding capacity while legacy carriers are cutting capacity for summer or keeping growth low.
- Low-cost carriers are looking to step up capacity growth in the summer but this is not fully reflected in the schedules or is limited by aircraft deliveries.

Figure 2.10: States forecast detail for 2014



Source: EUROCONTROL

Figure 2.11: States forecast detail for 2015



Source: EUROCONTROL

2.5.2 The Medium Term Forecast

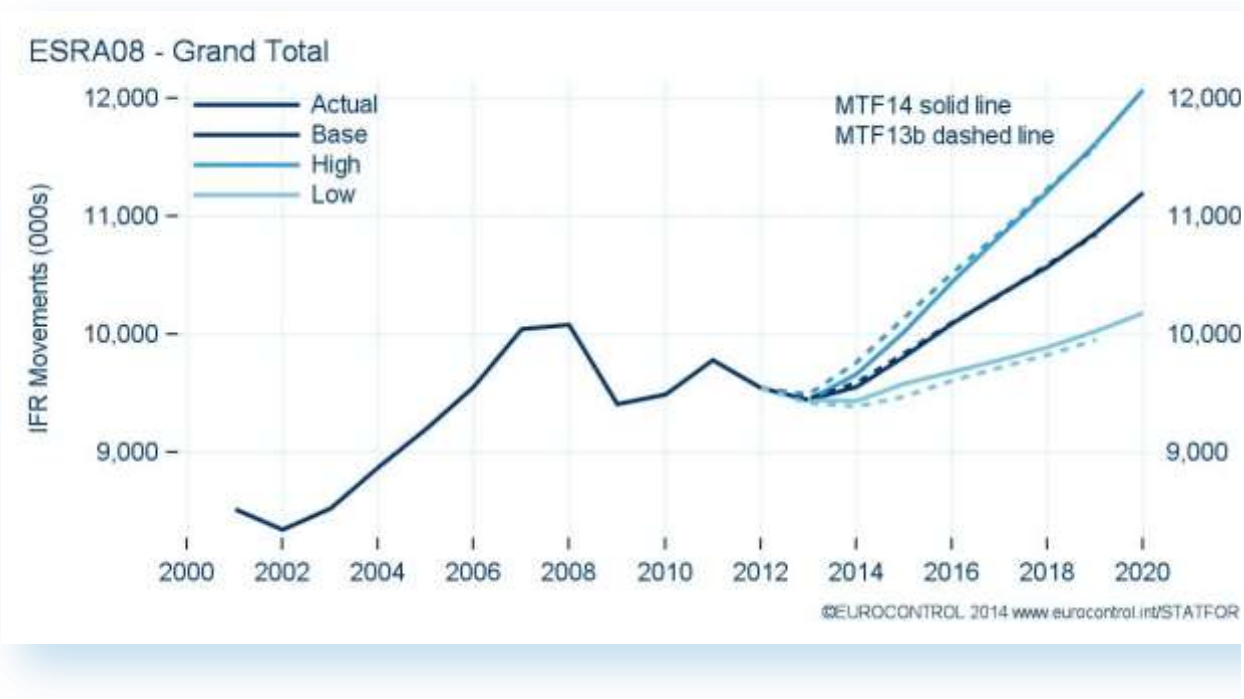
IFR movements in Europe, forecast by EUROCONTROL, are estimated to grow at 2.6% annually after 2015, with higher rates in 2016 and 2020 due to the extra growth from the leap year effect. While a growth rate of 2.7% per year between 2015 and 2017 will slow down in 2018 due to the lack of capacity in the European network, the new Istanbul airport expected to open in 2019 will partially lift the constraints and growth rates.

The current forecast (MTF14) for total Europe continues to be well-aligned with the previous seven-year forecast issued in September 2013 (MTF13b), especially for the base scenario. The first two years of the forecast show narrower low-to-hi ranges because uncertainty has now been reduced in the short term.

As noted above, EUROCONTROL has also produced high and low traffic growth scenarios which differ in terms of methodology and input assumptions. The most probable scenario of future growth in flight

movements is designated by the base case, between the high and low cases. As illustrated in Figure 2.12, in 2020 for the low case, 10.1 million movements are forecast, a level expected to be achieved by 2016 in the base case. In the high case, 12.1 million movements are forecast by 2020.

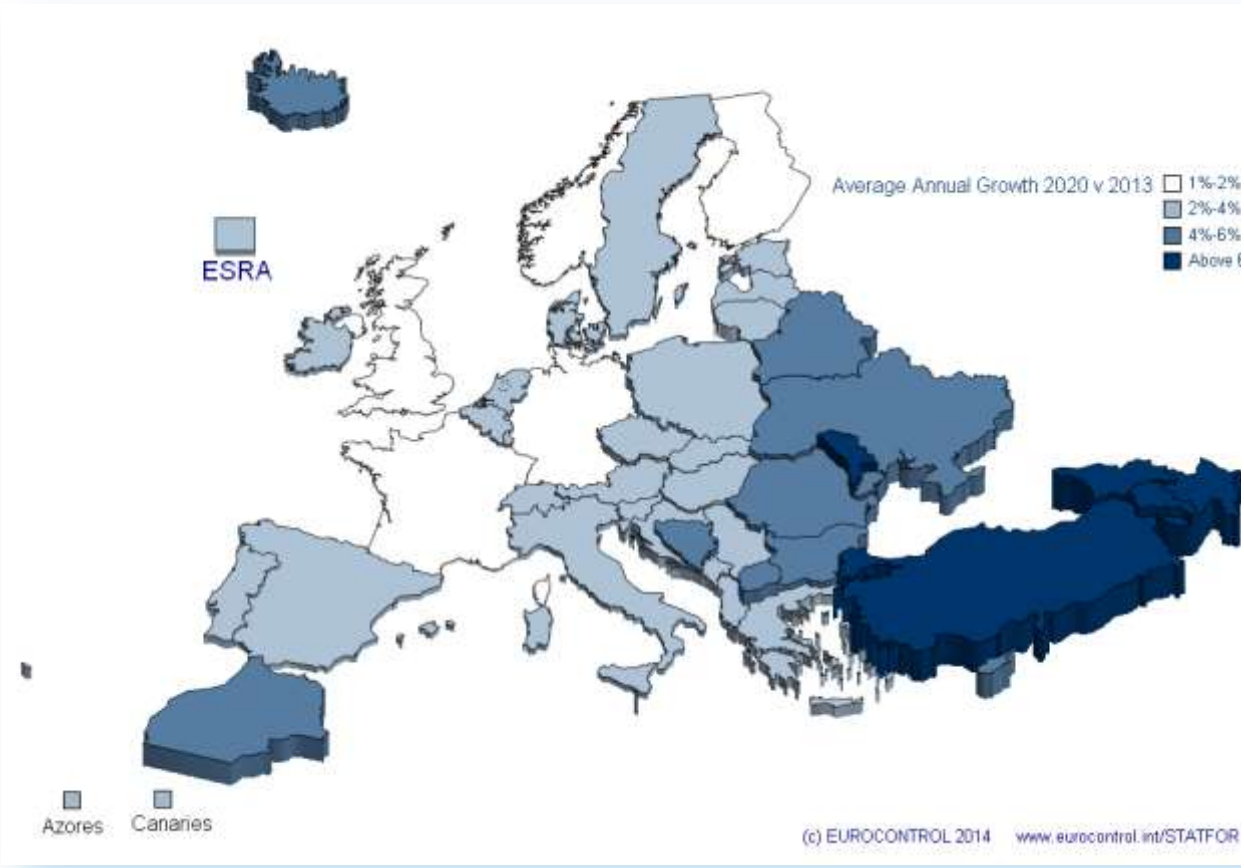
Figure 2.12: EUROCONTROL Medium Term Forecast 2013-2020



Source: EUROCONTROL

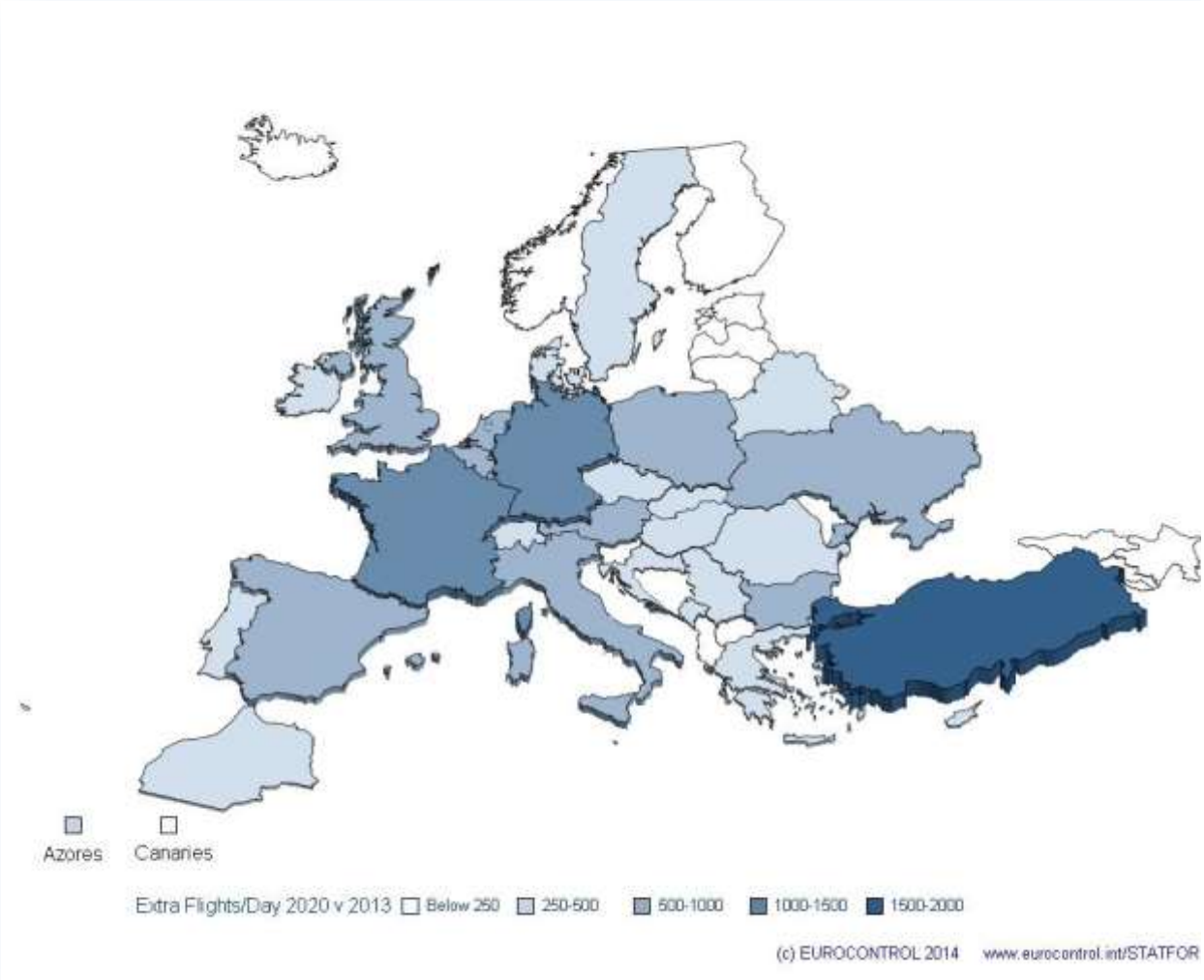
As Figure 2.13 and Figure 2.14 show, the growth is not uniform across Europe, with growth rates being much weaker in the more mature markets of Western Europe (including France, Italy, UK, Germany and Spain). However, these states will see the greatest number of extra flights per day. Turkey will see both the fastest growth rates and the highest number of extra flights per day in Europe. It is expected to become the biggest contributor to growth in Europe.

Figure 2.13: Average Annual Growth 2020 vs 2013 by State



Source: EUROCONTROL

Figure 2.14: Absolute Growth 2020 v 2013 by State



Source: EUROCONTROL

Airport capacity constraints are one of the cited causes that will restrain flight growth rates. According to the EUROCONTROL forecast, demand for about 144,500 flights will not be accommodated by 2020 causing a -1.3% reduction in growth over 2013-2020.

With regards to the impact of the high-speed rail network, there are little changes to the previous year's forecast. Expansion of the high-speed rail network will reduce flight growth by 0.4% over the next seven years, as the improvement in train journey times leads to increased competition with air travel and a consequent likely reduction in the short-haul air network where high speed rail competes with air services directly.

Over the entire network this figure is relatively insignificant, but on specific city-pairs this substitution effect has a greater impact, especially at the end of the forecast horizon. Together with a few projects removed

(Paris/Brussels - Amsterdam/Rotterdam, now in operation), others added as now falling within then the horizon (e.g. Gothard project between Milan and Zurich to open in 2020, Ankara - Sivas) or even improved in terms of timing (e.g. Madrid – Paris, 100 minutes faster in the previous forecast), the current reduction in traffic is for to 47,300 flights in 2019. Last year, the reduction was comparable with around 45,000 flights. By 2020, it is now assessed that around 51k flights will be removed from the network.

2.5.3 The Long Term Forecast

The long-term forecasts look at a range of distinct possible scenarios for how the air traffic industry might look in 20 years' time. This allows a range of 'what if?' questions to be explored, for factors inside the industry (e.g. the growth of small business jets, or of point-to-point traffic) or outside (e.g. The price of oil, or environmental constraints).

The last long-term forecast was produced in 2012 for a projection until 2035. Please refer to the 2012 Annual Report for more details.

2.6 World Air Cargo Forecast

Boeing produces the most complete long term forecast for global air cargo over the next 20 years, which is updated bi-annually, with the latest October 2012 review examined in the previous Annual Analyses of the EU Air Transport Market. However, in its annual Global Market Outlook Boeing briefly reports the key indicator outlook on cargo for the next twenty years. Air cargo traffic is measured in Revenue Tonne-Kilometres (RTKs), which is the amount of cargo carried multiplied by the distance it is transported.

Boeing forecasts an average annual growth in RTKs of 4.7% between 2013 and 2033, slightly lower than air transport passengers' average annual growth in terms of RPK projected over the same period. This is mainly due to global GDP and world trade recovering to their historic growth levels.

Airbus has also published a freight forecast[12] for 2014-2033. When considering drivers of demand for air cargo, the European aircraft manufacturer notes that there is a high correlation between macro-economic drivers and the success of the air freight market. In particular, several of the most important economic drivers are:

- GDP growth
- Exports/imports
- Industrial production
- Fuel prices
- Real consumption

Airbus suggests that, similar to the economy, much of the growth in the general air freight market is being driven by emerging markets.

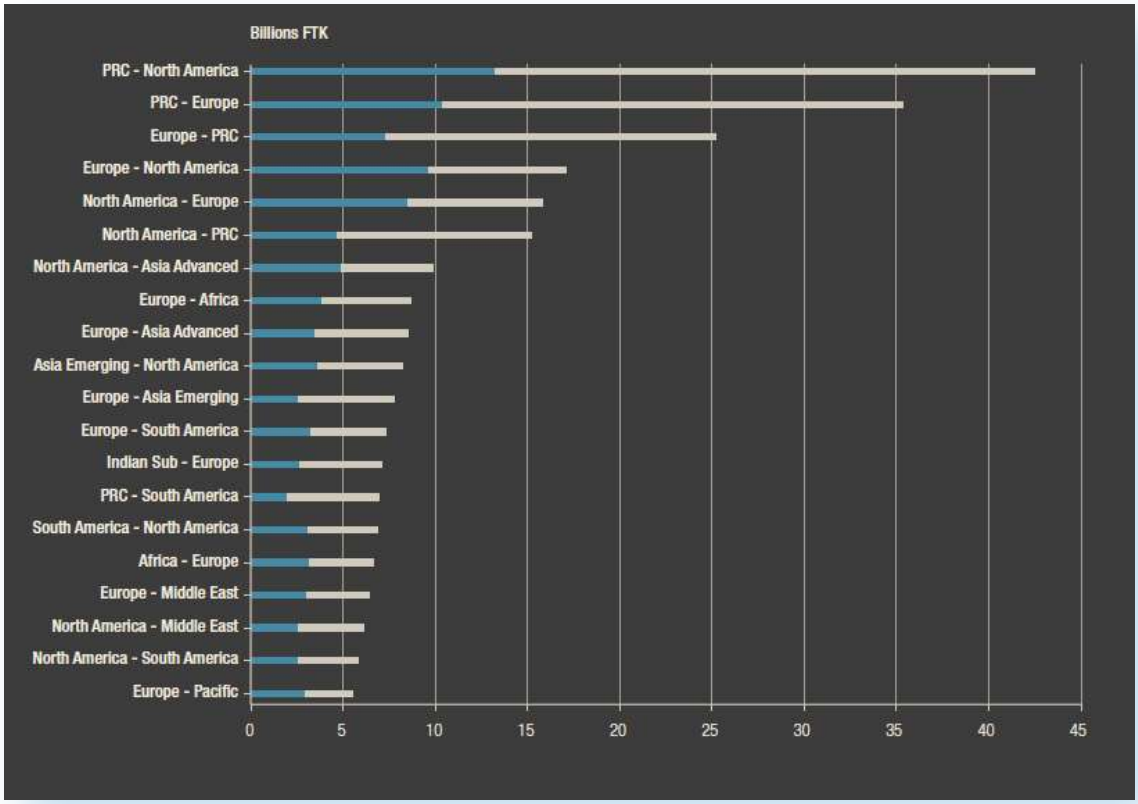
Focusing on air cargo traffic growth, Airbus forecasts an annual average growth rate in FTKs (Freight Tonne-Kilometres) of 4.5% from 2014-2033 down from their prediction of 4.8% listed in their previous

[12] Airbus Global Market Forecast – Future Payloads; Freight Forecast 2014-2033

annual forecast. This downward revision, Airbus state, is primarily attributed to the 4.3% annual growth in trade which is down from the 4.6% forecasted in 2012.

The importance of China is reflected in Figure 2.15, where we see the top three global air freight flows forecast to involve the country. In 2013, air freight traffic between China and North America leads the way at 7% and Airbus predicts that this lead will remain the same until 2033.

Figure 2.15: Top 20 Largest Air Freight Traffic Flows in 2032, CAGR 2013-2033 (%)



Source: Airbus

3. Airlines

3.1 Introduction

2013 saw continued growth in the World Air Transport market. IATA recorded growth of 5.2% of Revenue Passenger Kilometres (RPK) compared to 2012.

With an industry average of 79.5%, passenger load factors were 0.4% higher than in 2012, a result of the growth in RPKs remaining above growth in Available Seat Kilometres (ASKs) as airlines kept tighter control over the available capacity in the markets.

As is becoming a trend, the cost of jet fuel remained a key concern for airlines in protecting profitability in 2013. Jet fuel prices were volatile during the year with a marked drop early in the year, before prices recovered through the summer, closing the year at a lower price than at the start.

In 2013, industry-wide net profits of some US$ 10.6 billion are markedly higher than those recorded in 2012, however, it should be noted that the total figure is skewed by a $8billion tax benefit to Delta Airlines. Operating Profit was up $8.2billion to $20.3billion (+67%) in 2013. Year-on-year expenses grew 3.4%, a significantly lower rate than Operating Profit, implying a strong Net Profit increase would follow (discounting Delta's tax benefit). The core reason for this is a higher rate of revenue increase compared to expenses, where revenues have been driven up by demand.

Overall, European airlines have seen positive traffic increases throughout 2013 compared to 2012, both load factors and passenger numbers have increased. There have been fewer changes to the European airline market rankings since 2012 with the top carriers being Lufthansa, Air France-KLM and British Airways. These airlines are the top three in Europe in terms of RPKs. Ryanair and Thomson Airways have remained the top Low Cost Carrier and Charter airline respectively. Air freight is also looking positive compared to the situation depicted in 2012 albeit only marginal improvement. European airlines did not improve greatly their financial performance and while breakeven load factors were the top among all other regions, growth in profits and traffic were the worst of all regions with the exception of Africa. The growth of demand for European airlines is falling behind regions such as Asia-Pacific, Middle East and Latin America which are sustaining strong growth.

3.2 Airline Financial Performance

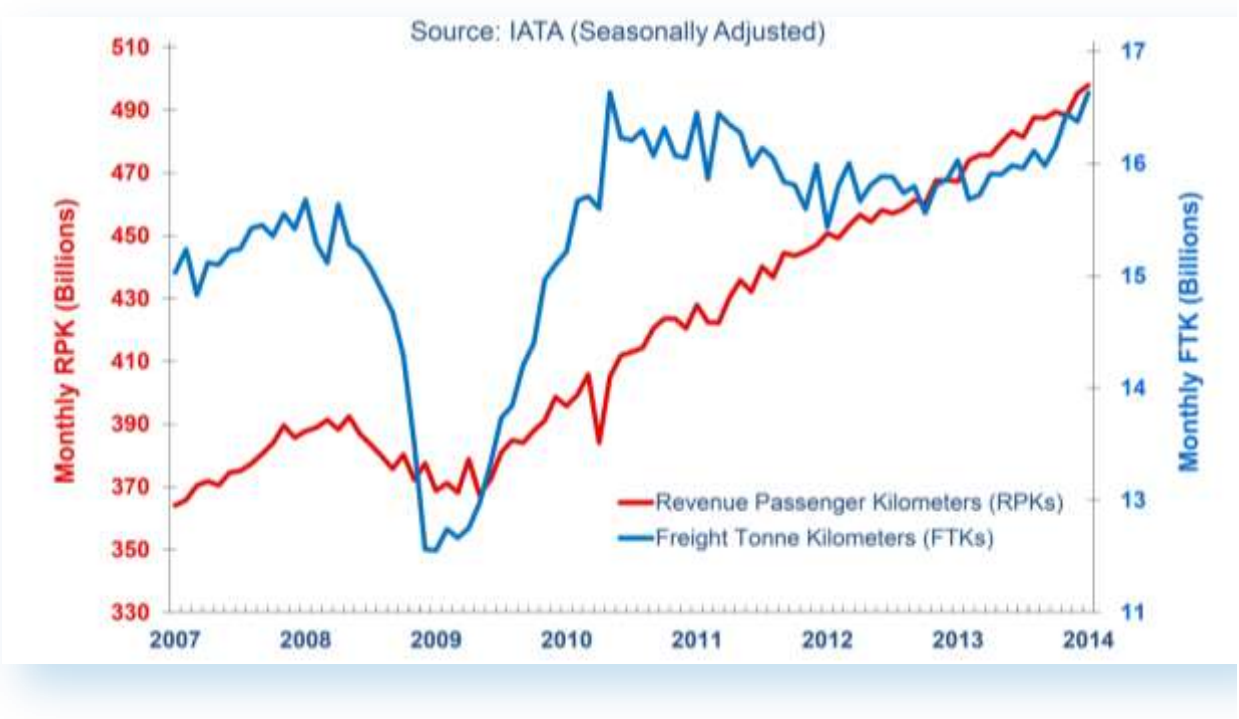
3.2.1 Traffic & Capacity

Passenger traffic, measured in Revenue Passenger Kilometres (RPKs), has continued to grow at a consistent pace since 2011, achieving 5.2% growth in 2013, slightly down on the 5.3% growth witnessed in 2012[13]. Cargo experienced some growth with Freight Tonne Kilometres (FTKs) up by only 1.8% in 2013 but nevertheless being a reversal of the 1.1% decline in 2012[14].

[13] IATA Air Passenger Market Analysis - December 2013, accessed at http://www.iata.org/publications/economics/Documents/passenger-analysis-dec2013.pdf

[14] IATA WATS 58 Summary

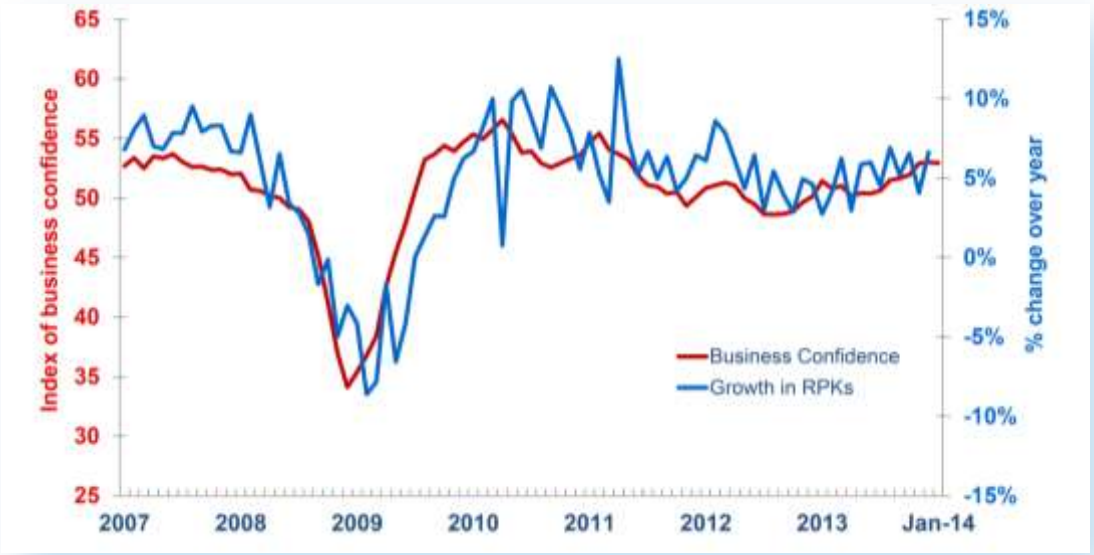
Figure 3.1: Total Air Freight & Passenger Volumes (Seasonally Adjusted)



Source: IATA Air Passenger Monthly Analysis, January 2014, accessed at www.iata.org

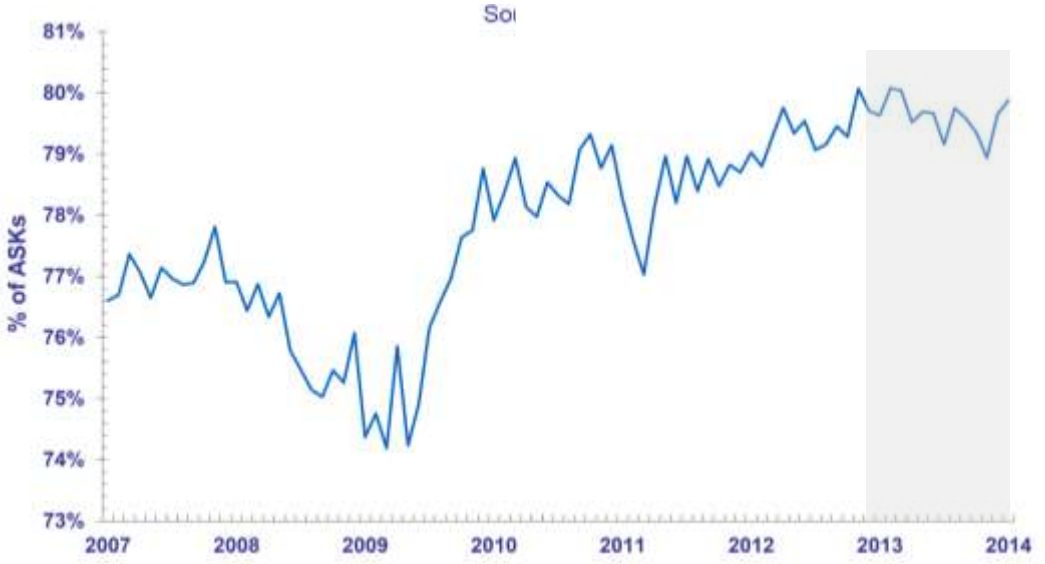
Year 2013 saw steady GDP growth throughout the globe which aided the continued positive trend in passenger traffic experienced in the same year. Driven by advancing economies, GDP across 2013 grew at a steady rate of 3.0%, albeit slightly below 2012 levels of 3.2%. It is this growth which has aided the continued positive trend in passenger traffic experienced in the same year. Airlines in emerging regions such as the Middle East and Asia-Pacific posted strong growth to complement stable growth in the mature markets.

Figure 3.2: Worldwide growth in air travel & Business Confidence



Source: IATA Air Passenger Monthly Analysis January 2014, accessed at www.iata.org ; acknowledgement to JP Morgan/Market

Figure 3.3: Load Factor on Total Passenger Market (Seasonally Adjusted)



Source: IATA Air Passenger Market Analysis – January 2014, accessed at www.iata.org

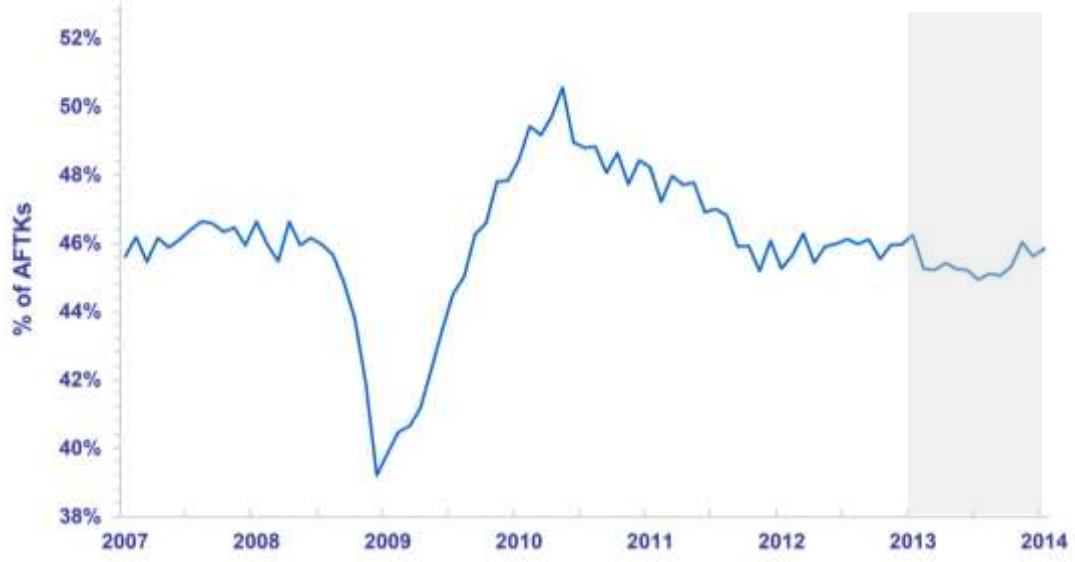
Airlines were able to increase Passenger Load Factors during 2013 as the rate of growth in RPKs outpaced the rate of growth in Available Seat Kilometres (ASKs). With an industry average of 79.5%,

passenger load factors in 2013 were 0.4% above the levels seen in 2012. North American airlines recorded the highest figure at 82.8% on the back of improving consumer spending in the region.[15]

For air freight, capacity increased by 2.6% in 2013 and load factors increased by 0.1 percentage points to 45.3%, with an upward trend in Q3, stabilising in Q4. It is noted that freight load factors are always significantly below the levels achieved by passenger load factors for the following primary reasons:

- The seasonality of freight;
- Directional imbalances by route, and;
- The provision of excess freight capacity on many routes caused by the need to provide sufficient seat capacity to meet passenger demand (irrespective of freight demand.)

Figure 3.4: Load Factor on Total Freight Market (Seasonally Adjusted)



Source: IATA Air Freight Market Analysis – January 2014, accessed at www.iata.org

A positive trend in single-aisle aircraft utilisation[16] is shown in Figure 1.5 and was attributed to the increasing operations of LCCs that work to tighter margins and hence push for higher asset utilisation.

Figure 3.6 indicates that, globally, airlines were using their wide-body aircraft more during 2013, achieving higher aircraft utilisations than the previous four years. Twin-aisle aircrafts are more typically used by legacy carriers.

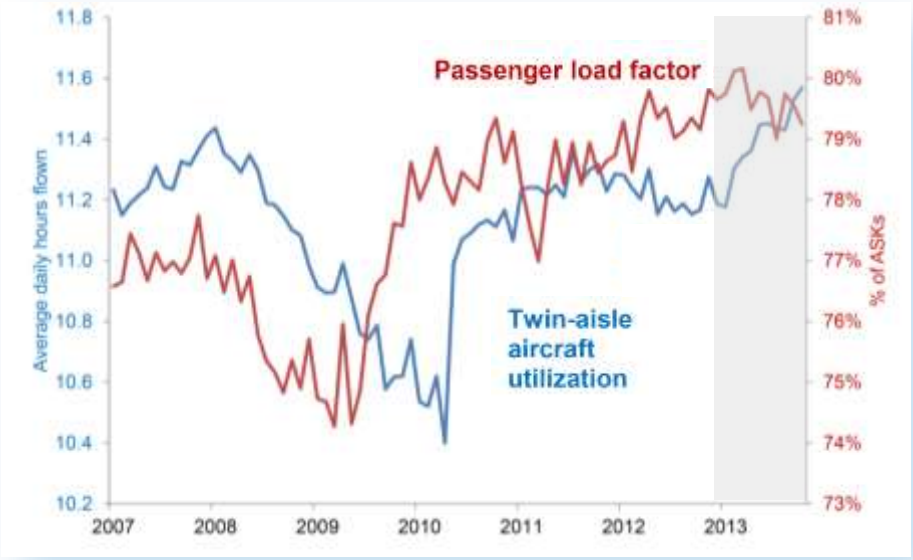
[15] IATA Air Passenger Market Analysis - December 2013, accessed at http://www.iata.org/publications/economics/Documents/passenger-analysis-dec2013.pdf

[16] IATA Financial Outlook Presentation, March 2013, accessed at http://www.iata.org/whatwedo/Documents/economics/Industry-Outlook-Presentation-March-2013.pdf

Figure 3.5: Aircraft Utilisation

Source: IATA Financial Outlook Presentation, March 2013, data to October 2013, accessed at www.iata.org

Figure 3.6: Aircraft Utilisation



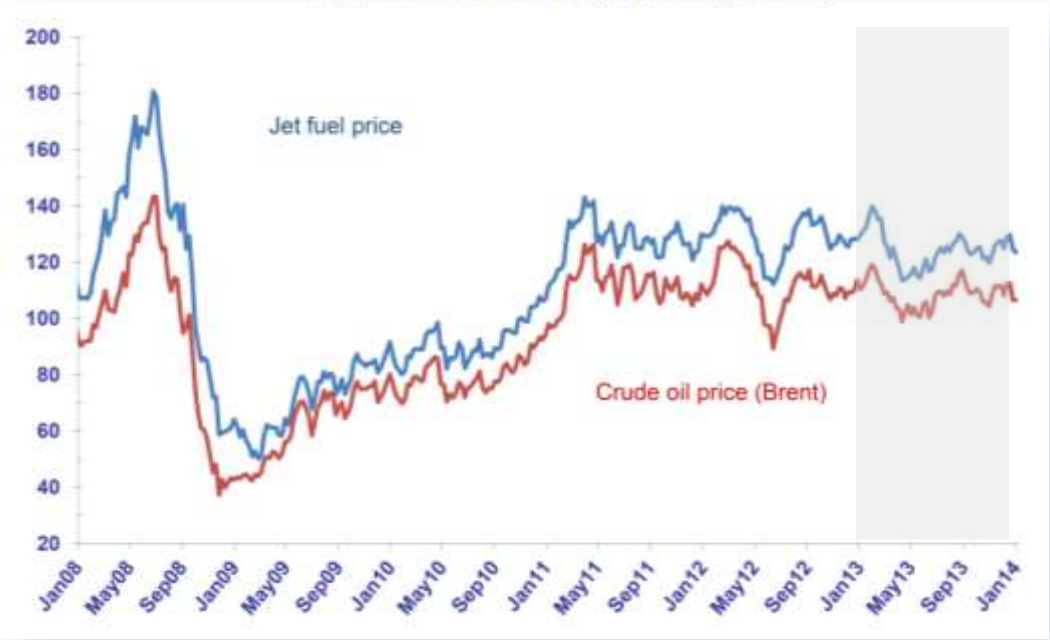
Source: IATA Financial Outlook Presentation, December 2013, data to October 2013

3.2.2 Costs, Revenues & Profitability

As in most previous years, the cost of jet fuel remained a key concern for airlines - contributing up to 30% of their total costs in 2013 (Table 1-1).

Figure 3.7 below shows the volatility of jet fuel prices during the past six years.

Figure 3.7: Jet Fuel and Crude Oil Price (US$ per barrel)



Source: IATA Airlines Financial Monitor January 2014, accessed at www.iata.org ; acknowledgment to Platts and RBS

Throughout 2013, crude oil and jet fuel prices maintained a similar average figure to that for 2012 and 2011, noting a slight downward trend overall. IATA reports that crude oil prices may stabilise at their current levels as economic recovery leads to heightened demand[17]; however, industry commentators have indicated that a downward trend may prevail in response to increasing production and availability that has been driven by the high prices previously[18].

Despite fuel prices remaining at similar levels to those seen in 2012, average return fares were significantly lower in 2013 than the previous year. IATA reports that this is not entirely indicative of the situation as the fare data does not include surcharges and ancillary revenues that would offset the decline. However, a weak market in Asia and a strengthening dollar continue to drive the downward trend. In contrast, US passenger yields have grown in 2013, despite a third quarter drop. IATA reports that this is in response to increasing demand and industry consolidation in 2013.

[17] IATA Airlines Financial Monitor January 2014, accessed at www.iata.org

[18] Oil Price Forecast for 2013-2014 published by Forbes at http://www.forbes.com/sites/billconerly/2013/05/01/oil-price-forecast-for-2013-2014-falling-prices/

Figure 3.8: Average International Return Air Fare and US Airline Yield (Seasonally Adjusted)

Source: IATA Airlines Financial Monitor January 2014, accessed at www.iata.org

Table 3.1 is IATA's summary of the recent history of global airline costs and revenues, based on actuals provided by ICAO.

Table 3.1: System-Wide Global Commercial Airlines Industry Statistics

	2007	2008	2009	2010	2011	2012	2013E
REVENUES, US$ billion	510	570	476	564	618	679	710
% change	9.6	11.7	-16.5	18.4	9.7	9.8	4.6
Passenger, US$ billion	399	444	374	445	500	539	569
Cargo, US$ billion	59	63	48	66	67	64	61
Traffic Volumes							
Passenger growth, RPK, %	8	2.4	-1.2	8	6.3	5.3	5.7
Scheduled passenger numbers ,millions	2,543	2,581	2,479	2,681	2,845	2,977	3141
Cargo growth, FTK, %	4.7	-0.7	-8.8	19.4	0.4	-1	1.8
Freight tonnes, millions	42.5	41.1	40.8	48.6	49.7	49.2	50.2
World economic growth, %	4.3	1.8	-1.7	4.3	3.1	2.5	2.4
Passenger yield, %	1.7	8.2	-13.7	9.6	5	2.9	-0.2
Cargo yield, %	5.6	7	-15.2	14.4	0.8	-4.1	-4.9
EXPENSES, US$ billion	490	571	474	536	604	667	690
% change	8.8	16.5	-16.9	13.1	12.7	10.4	3.5

	2007	2008	2009	2010	2011	2012	2013E
Fuel, US$ billion	133	187	123	138	174	208	210
% of expenses	27	33	26	26	29	31	30
Crude oil price, US$/barrel	73	99	62	79.4	111.2	111.8	108.8
Jet kerosene price, US$/barrel	90	126.7	71.1	91.4	127.5	129.6	124.5
Fuel consumption, billion gallons	70	69	66	69	71	72	73
CO2 emissions, million tonnes	665	661	626	655	673	682	700
Non-Fuel, US$ billion	357	384	351	398	430	459	480
Cents per ATK (non-fuel unit cost)	38.1	40	38.2	41.7	42.5	44.1	44.1
% change	-0.1	4.9	-4.6	9.3	1.9	3.8	0
Capacity growth, ATK, %	6.6	2.7	-4.2	3.7	6	2.9	4.5
Flights, million	26.7	26.5	25.9	27.8	30.1	31.2	32.2
Load Factors							
Break-even load factor, %	59.9	61.8	61.4	63.2	64.3	64.8	64.2
Weight load factor achieved, %	62.4	61.7	61.6	66.4	65.8	66	66
Passenger load factor achieved, %	77	76	76.1	78.6	78.4	79.3	79.7
OPERATING PROFIT, US$ billion	19.9	-1.1	1.9	27.6	14	12.1	20.3
% margin	3.9	-0.2	0.4	4.9	2.3	1.8	2.9
NET PROFIT, US$ billion	14.7	-26.1	-4.6	17.3	7.5	6.1	10.6
% margin	2.9	-4.6	-1	3.1	1.2	0.9	1.5
per departing passenger, US$	5.78	-10.11	-1.86	6.45	2.64	2.05	3.37
RETURN ON INVESTED CAPITAL, %	5.5	1.4	2	6.3	4.7	3.7	4.4

Source: IATA Fact Sheet June 2014
Notes: 2013 data is an estimate; RPK = Revenue Passenger Kilometre, ASK = Available Seat Kilometres, FTK = Freight Tonne Kilometres, ATK = Available Tonne Kilometres

Costs and revenues shown in Table 3.1 are in current USD and include the impacts of inflation.

Industry wide net profits of $10.6 billion are $4.5 billion higher than 2012, however, it should be noted that the total figure is skewed by an $8billion tax benefit to Delta Airlines. With relatively flat growth in expenses, a truer metric of financial performance can be gauged from Operating Profit, which was up $8.2billion to $20.3billion (+67%) in 2013. This was matched by an increase in Operating Margin to 2.9% from 1.8% in 2012.

Non-fuel costs have continued to rise in line with inflation; however fuel costs are approximately the same in 2013 as they were in 2012, which is at their highest level since 2008. This, alongside ever-increasing fuel efficiency measures, will have contributed to a rise in Net Profit margin from 0.9% in 2012 to 1.5% in 2013.

Table 3.2: Financial Results by Region

Region	2012	2013
Africa		
Net post-tax profit, $billion	-0.1	-0.1

Region	2012	2013
Per Passenger, $	-1.64	-1.66
EBIT margin, % revenue	-0.4%	-0.5%
RPK growth, %	7.5%	5.1%
ASK growth, %	6.4%	5.0%
Load factor, % ATK	55.9%	55.7%
Breakeven load factor, % ATK	56.1%	56.0%
Asia-Pacific		
Net post-tax profit, $billion	2.7	2.0
Per Passenger, $	2.91	2.01
EBIT margin, % revenue	1.9%	2.8%
RPK growth, %	6.1%	7.2%
ASK growth, %	5.4%	7.1%
Load factor, % ATK	67.3%	67.1%
Breakeven load factor, % ATK	66.0%	65.2%
Middle East		
Net post-tax profit, $billion	1.0	1.0
Per Passenger, $	6.90	6.33
EBIT margin, % revenue	3.0%	2.6%
RPK growth, %	14.7%	11.9%
ASK growth, %	12.4%	11.4%
Load factor, % ATK	60.6%	60.2%
Breakeven load factor, % ATK	58.8%	58.7%
Latin America		
Net post-tax profit, $billion	-0.2	0.2
Per Passenger, $	-0.91	0.82
EBIT margin, % revenue	1.5%	2.2%
RPK growth, %	9.5%	6.5%
ASK growth, %	7.6%	4.6%
Load factor, % ATK	59.7%	61.2%
Breakeven load factor, % ATK	58.8%	59.8%
North America		
Net post-tax profit, $billion	2.3	7.0
Per Passenger, $	2.83	8.55
EBIT margin, % revenue	3.4%	5.3%
RPK growth, %	1.0%	2.2%
ASK growth, %	0.4%	1.6%
Load factor, % ATK	64.0%	64.0%
Breakeven load factor, % ATK	61.8%	60.6%
Europe		
Net post-tax profit, $billion	0.4	0.5
Per Passenger, $	0.53	0.58
EBIT margin, % revenue	0.7%	0.7%

Region	2012	2013
RPK growth, %	4.5%	4.0%
ASK growth, %	2.8%	2.5%
Load factor, % ATK	66.5%	66.9%
Breakeven load factor, % ATK	66.0%	66.4%

Source: IATA Fact Sheet June 2014, accessed at www.iata.org

Note: EBIT = Earnings before Interest and Tax. RPK = Revenue Passenger Kilometre, ASK = Available Seat Kilometres, ATK = Available Tonne Kilometres. Current year or forward-looking industry financial assessments should not be taken as reflecting the performance of individual airlines, which can differ significantly. Source: ICAO, IATA

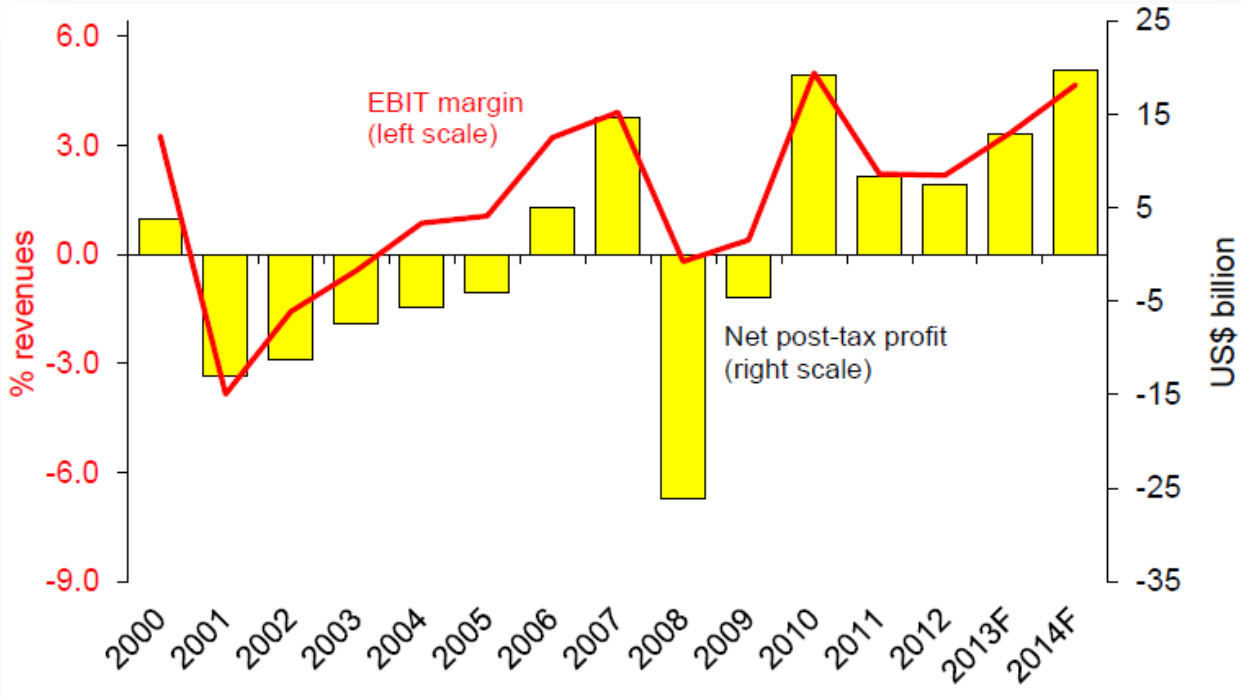
Table 3.2 suggests that in 2013 the airlines in North America and Latin American were performing better than in 2012 while the situation in Africa worsened. Despite this, it is useful to look at each individual performance indicator to ascertain where each region is performing better or worse.

When comparing each region's indicators it was interesting to note that while North America was top of the list for improvements in comparison to 2012 and Africa was bottom , it seems that the latter's RPK and ASK growth has surpassed North America. The Asia-Pacific region was able to improve the EBIT margin despite of the healthy traffic growth.

While the Middle East had the best RPK and ASK growth, it did experience lower load factors and breakeven load factor values in comparison to other regions, with the exception of Africa. North America surpassed other regions in terms of post-tax profit, net profit per passenger and EBIT. Europe performed poorly in net profit per passenger, EBIT, RPK and ASK growth but well in terms of breakeven load factor.

Figure 3.9 shows profit/loss in terms of net result as a percentage of revenue and covering the longer period from 2000, including the related EBIT margin. The impacts of the terrorism events of 2001 as well as the recession of 2008/09 are clearly seen. The estimated result for 2013 shows the predicted improvement from 2012, with IATA forecasting continued growth in 2014.

Figure 3.9: Global Commercial Airline Profitability

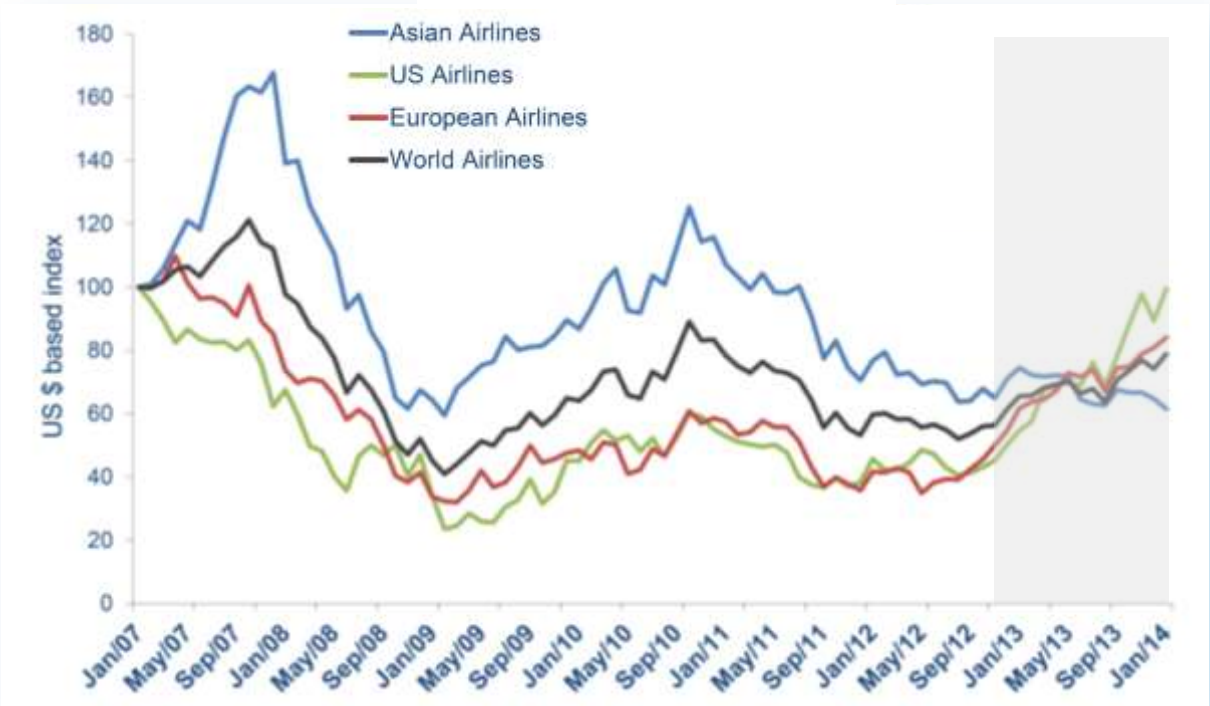


Source: IATA Industry Economic Performance, December 2013 Report (Presentation), accessed at www.iata.org ; acknowledgement to ICAO

The share values of the world's major airlines posted regionally diverse results for 2013 with US and European airlines showing the strongest growth (78% and 48% increase respectively) whilst the Asian airlines were in decline (-9%). Share prices generally reflect a company's operational performance. IATA attributed the strong US airlines performance to consolidation that increased load factors whilst Asian airlines remain restricted by poor cargo performance[19].

[19] IATA Airlines Financial Monitor – November 2013, accessed at www.iata.org

Figure 3.10: Airlines Share Price Index



Source: IATA Airlines Financial Monitor January 2014, accessed at www.iata.org ; acknowledgement to Bloomberg and Thomson Reuters

The airline groups in the "2013 Top 25 Airline Groups by Revenue" remained the same as that in 2012. Of the top 5 airlines, Lufthansa and United Continental posted modest net profits, whilst Air France/KLM suffered notable losses. Delta was by far the most profitable airline in the Top 25; having benefitted from a fourth quarter tax benefit of $8billion. Without this, Delta's net profit stood at $2.7billion for 2013, which is still the strongest of the Top 25; this is due to an increase in operating revenue against stable operating expenses[20].

A new entrant in the Top 25 is American Airlines Group (AAG) following the merger of American Airlines and US Airways (both previous Top 25 carriers in their own right). Under this, US Airways Group became a subsidiary of AMR Corporation, which changed its name to American Airlines Group. The deal was initially announced on 14 February 2013 but was only finalised on 9 December 2013 after an injunction by the US Department of Justice. The merger is likely to be the last step in consolidation of the US market, leaving American, Delta, Southwest Airlines and United serving ~85% of US passenger traffic[21]. AAG posted a loss in 2013 due to the inherited debt from AMR that had previously been restructuring under Chapter 11 bankruptcy protection.

[20] FlightGlobal article "Delta posts $3.4bn operating profit in 2013", 21 January 2014, accessed via FlightGlobal dashboard

[21] FlightGlobal article "American and US Airways close merger", 9 December 2013, accessed at http://pro.flightglobal.com/news/articles/american-and-us-airways-close-merger-393924/

United Continental Holding posted a strong return to profit in 2013 on the back of job cuts and improved operational performance at United Airlines[22].

Amongst the European groups, Lufthansa and Air France/KLM Group continued restructuring through 2013, with a focus on cargo and short- and medium-haul operations. Despite this, net profits fell for both airline groups in 2013[23].

IAG's return to profitability in 2013 has been driven by British Airways' strong origin-destination performance from Heathrow, whilst Iberia continues to suffer losses due to a weak Spanish market. Reduced labour costs have allowed the two airlines to compete with LCCs and grow their passenger base.

Table 3.3: 2013 Top 25 Airline Groups by Revenue

Ranking in 2013	Group/Airline	Country	Region	Revenues (US$ m)	Net Profit ($m) 2013	Net Profit ($m) 2012
1	American Airlines Group	United States	North America	40,419	-1,233	-1,239
2	Lufthansa Group	Germany	EU	39,920	416	1,584
3	United Continental Holdings	United States	North America	38,279	571	-723
4	Delta Air Lines	United States	North America	37,773	10,540	1,009
5	Air France/KLM Group	France	EU	33,940	-2,417	-1,574
6	FedEx	United States	North America	27,121		
7	International Airlines Group	United Kingdom	EU	24,686	195	-898
8	Emirates Group	United Arab Emirates	Middle East	23,895	1,112	845
9	Southwest Airlines	United States	North America	17,699	754	421
10	Qantas	Australia	Asia-Pacific	16,218	6	-253
11	China Southern Air Holding Co	China	Asia-Pacific	16,045	448	601
12	Air China	China	Asia-Pacific	15,985	589	842
13	ANA Group	Japan	Asia-Pacific	15,932	188	518
14	China Eastern Airlines	China	Asia-Pacific	14,811	341	465
15	LATAM Airlines Group	Chile	Latin America	13,266	-281	-523
16	Japan Airlines	Japan	Asia-Pacific	13,029	1,654	2,061
17	Cathay Pacific Group	Hong Kong	Asia-Pacific	12,955	338	111
18	Singapore Airlines Group	Singapore	Asia-Pacific	12,088	285	305
19	Air Canada	Canada	North America	11,965	10	-136
20	Korean Air	South Korea	Asia-Pacific	10,688	-283	348
21	Turkish Airlines (THY)	Turkey	Europe (non-EU)	9,862	354	645
22	Aeroflot Russian Airlines	Russia	Europe (non-EU)	9,086	229	167
23	Qatar Airways Group	Qatar	Middle East	8,414	N/A	N/A

[22] FlightGlobal article "Analysis: United revenue initiatives begin bearing fruit", 23 January 2014, accessed via FlightGlobal dashboard

[23] Airlines Business: World Airlines Rankings 2014, August 2014, accessed at www.flightglobal.com

Ranking in 2013	Group/Airline	Country	Region	Revenues (US$ m)	Net Profit ($m) 2013	2012
24	Ryanair	Ireland	EU	6,763	702	733
25	Thai Airways International	Thailand	Asia-Pacific	6,685	-389	203

Source: Airline Business: World Airline Rankings 2014, August 2014 (green highlight denotes European Airline Groups)

Ten of the top 25 airline groups in the list are in Asia Pacific airline. A drop in the passengers carried in a difficult market led to Thai Airways posting a net loss in 2013. Korean Air also posted a loss on the back of spending to settle price-fixing law suits (~$100m) and a continuing decline in its Japanese routes due to competition[24]. Qatar Airways is a new entry to the list which highlights the continued boom in the Middle East market. At the other end of the scale, EasyJet is now ranked outside the top-25 list, leaving only four EU carrier groups to this list. The other eight airlines in the Asia Pacific region recorded modest net profits in 2013 which itself accentuates the healthiness of the market as a whole.

3.3 Major Market Entries and Exits in Europe

Compared to 2012 when market entry/exit was rife, there were few significant changes in the European airline market in 2013, compiled in Table 3.4.

Table 3.4: European Airline New Entrants / Ceasing Operations in 2013

Airline	Country	Remarks
New Entrants		
Evelop Airlines	Spain	Domestic and international leisure charters to Cuba, the Dominican Republic and Mexico. (as at 3/2014).
HOP!	France	HOP! was formed from a merger of Airlinair, Brit Air and Régional. When operations commenced in 31 March 2013, HOP! served 104 destinations with its own aircraft and crew and 32 destinations on behalf of Air France.[25]
Ceasing Operations		
Air Alps	Austria	Regional airline that connected to 10 Italian destinations. Operations ceased in November 2012 and the airline liquidated in August 2013.
Air Gargo Germany	Germany	Operating license withdrawn by Germany's civil aviation regulator
Augsburg Airways	Germany	A german regional airline providing feeder service at Munich for Lufthansa ceased operations on 31 October 2013 and was liquidated following Lufthansa withdrawing its contract.
Flynonstop	Norway	Low cost, virtual airline which operated international scheduled passenger services from Kristiansand to destinations in Europe. Operations commenced in April 2013, but ceased in October 2013 as the airline declared bankruptcy.
Medallion Air	Romania	Bucharest based charter airline. Fell into financial difficulties and had its air operator certificate suspended in July 2013. The airline was subsequently

[24] Australia Network News article "Korean Air posts $350m loss for 2013 with fewer Japanese travellers", 29 January 2014, accessed at http://www.abc.net.au/news/2014-01-29/an-korean-air-posts-loss/5223980

[25] HOP! Press Kit, 28 January 2013, accessed at http://www.hop.com/en/press/press-kits

Airline	Country	Remarks
		declared bankrupt with debts reported in the local press of EUR3million.

Source: Ascend, Flightglobal (for airline profiles)

There were also numerous failed plans for new airlines to enter the market, such as Libertas Air wanting to operate domestic services in Croatia, Menorca Air aiming to connect the island with regional destinations, and Rostock Airways intending to serve the regional German market; none of these came to fruition.

3.4 Legacy Carriers

Legacy carriers are full-service airlines operating domestic, regional and intercontinental passenger services, often from one hub in their home territory and providing between them a network of air services across the globe.

3.4.1 Top 25 Carriers

Capacity growth for the top 25 legacy carriers measured in ASKs grew by 3.9% in 2013 (Table 3.5). Delta remained at the top of the capacity rankings for 2013 with a 1% growth over 2012, extending its lead over United. Although North American airlines continue to appear at the top of the table, 2013 saw the largest Middle Eastern carrier, Emirates, break in to the top three with all of the Middle Eastern carriers in the top 25 recording a year of double-digit capacity growth.

American recorded growth in capacity following two years of consolidation under bankruptcy protection.

Turkish Airlines again posted the strongest growth in capacity of 21.1% in 2013 to match its growth in demand, continuing to develop its transfer market through Istanbul. Many legacy airlines in the Asia Pacific region increased capacity during 2013 despite the growing LCC market in the region. However, Cathay Pacific posted reduced capacity due to the strength of competition in the regional market and the constraints on expanding hub operations at Hong Kong International Airport.

Aeroflot has again posted high ASK growth – up17.8% in 2013 – in response to strong growth in the Russian market and Aeroflot's strength in this market[26].

Table 3.5: Top 25 Legacy Carriers

Rank	Airline	Region	2013 ASKs (millions)	vs. 2012 (%)
1	Delta Air Lines	North America	374,479	1.0
2	United Airlines	North America	342,680	-1.5
3	Emirates Airline	Middle East	271,133	14.6
4	American Airlines	North America	248,589	1.2
5	Lufthansa	EU	193,807	1.0

[26] Centre for Aviation article "Aeroflot SWOT analysis", 4 April 2014, accessed at http://centreforaviation.com/analysis/aeroflot-swot-analysis-russias-national-champion-is-well-positioned-to-confront-new-challenges-160933

Rank	Airline	Region	2013 ASKs (millions)	vs. 2012 (%)
6	Air France	EU	165,350	-0.8
7	British Airways	EU	161,444	2.0
8	China Eastern Airlines	Asia Pacific	152,075	11.2
9	China Southern Airlines	Asia Pacific	151,467	8.9
10	Air China	Asia Pacific	128,784	8.3
11	US Airways	North America	124,494	4.3
12	Singapore Airlines	Asia Pacific	120,503	1.9
13	Turkish Airlines	Europe (non EU)	116,423	21.1
14	Cathay Pacific	Asia Pacific	112,038	-3.5
15	Air Canada	North America	110,334	1.9
16	Qatar Airways	Middle East	109,794	13.8
17	KLM	EU	103,793	3.0
18	All Nippon Airways	Asia Pacific	98,128	5.6
19	Qantas	Asia Pacific	90,944	-2.8
20	Korean Air	Asia Pacific	89,111	0.9
21	Thai Airways	Asia Pacific	85,655	8.1
22	Aeroflot	Europe (non EU)	76,429	17.8
23	TAM	Latin America	74,354	-3.9
24	Etihad Airways	Middle East	71,100	16.4
25	Japan Airlines	Asia Pacific	67,444	1.2
	Top 25 Total		**3,640,352**	**3.9**

Source: Airline Business: World Airline Rankings 2014, August 2014
Note: American Airlines and US Airways continued to operate separate services following the merger and are expected to start code sharing in 2014, with full merger in 2015. Shaded rows indicate European airlines.

3.4.2 Europe

IATA reported that its European airlines achieved year-on-year passenger traffic increases of 3.8%, trailing the global RPK growth figure of 5.2% in 2013. Average load factors increased to 80.2% from 79.6% in 2012[27]. These increases have been recorded despite the ongoing Eurozone financial/debt crisis.

The annual RPK growth recorded by the Association of European Airlines (AEA) for its member airlines in 2013 was 1.3%, which is lower than the 3.8% reported by IATA (Table 3.6). The lower growth recorded reflects that a significant portion of the additional capacity and passenger growth on European routes came from low cost carriers and those based outside the European Union (Turkish Airlines, Aeroflot). The AEA membership is primarily legacy European carriers which would not reflect growth achieved by many European low cost carriers.

[27] IATA Air Passenger Market Analysis December 2013, accessed at www.iata.org

Table 3.6: Scheduled Services of AEA Member Airlines in 2013

Region	Passenger Data (2013)				Change vs. previous year			
	Passengers Boarded (000)	Traffic RPK (million)	Capacity ASK (million)	Load Factor %	Pax %	Traffic %	Capacity %	PLF Pts
Domestic (1)	88,101	47,393	66,507	71.1	-3.3%	-4.2%	-6.6%	1.7
Cross-border Europe (2)	187,009	207,931	275,715	74.9	0.4%	1.6%	-0.6%	1.6
Total Europe (1+2)	275,056	255,282	342,205	74.2	-0.9%	0.4%	-1.8%	1.6
North Africa (3)	4,581	8,325	11,919	69.7	-3.7%	-9.2%	-7.1%	-1.6
Middle East (4)	11,224	34,312	46,867	73.1	3.7%	2.4%	0.5%	1.3
Intl Short/Medium Haul (2+3+4)	202,776	250,530	334,478	74.5	0.3%	1.2%	-0.7%	1.4
North Atlantic (5)	31,260	218,040	255,855	84.6	3.2%	3.3%	2.9%	0.4
Mid Atlantic (6)	7,725	61,668	73,304	84.1	2.2%	3.0%	2.7%	0.3
South Atlantic (7)	6,723	61,463	72,092	85.2	-1.3%	-1.5%	-2.1%	0.5
Sub Saharan Africa (8)	10,161	64,597	81,542	79.1	3.1%	1.9%	1.3%	0.5
Far East/Australasia (9)	21,719	174,276	212,287	82.0	0.9%	1.2%	0.2%	0.8
Total Long Haul (5 to 9*)	77,813	580,180	695,352	83.3	1.9%	1.8%	1.2%	0.5
Total Intl (2 to 9*)	280,589	830,709	1,029,830	80.4	0.8%	1.6%	0.6%	0.8
Total Scheduled (1 to 9*)	**368,673**	**878,098**	**1,096,336**	**79.9**	**-0.2%**	**1.3%**	**0.1%**	**0.9**

Source: AEA Monthly Traffic and Capacity data, available at www.aea.be/research/traffic/index.html
Notes: Passenger traffic is measured in passengers boarded (Pax), RPK (Revenue Passenger-Km) and capacity in ASK (Available Seat-Km). *Long haul region 'Other' is not shown above, but is included in the total.

Domestic markets suffered waning demand, with a decline in traffic of 4.2% and declines in both capacity (-6.6%) and Passengers Boarded (-3.3%). Cross border traffic in Europe increased by 1.6%, a sign that despite the continuing Eurozone issues, the market remained relatively resilient.

For AEA carriers in 2013, capacity and demand to North Africa fell significantly reflecting political unrest in the area.

Table 3.7 shows the 2013 traffic performance of the Top 25 European Airlines (ranked by RPK). For the Top 25 as a whole, there has been an increase in each of passengers boarded, traffic, capacity and load factor. It should be noted that significant contributors to this trend include four of the five airlines that are classified as European but are not based in EU member states – Turkish Airlines (Turkey), Aeroflot (Russia), Transaero (Russia), Norwegian (Norway).

The three largest European legacy carriers (Lufthansa, Air France and British Airways) showed mixed growth in terms of passenger numbers, RPKs and ASKs. British Airways saw a 6.3% increase in the number of passengers carried, largely as a result of strong demand for transatlantic services. This was a contrast to its sister company Iberia, which continues to reduce capacity in response to competition in the Spanish market, where another IAG airline, Vueling, is thriving as an LCC alternative.

Lufthansa also showed growth, to a lesser extent; however, Air France reduced capacity and therefore passengers in 2013 amid on-going restructuring in the Air France-KLM group.

Low Cost Carriers (highlighted in the table) showed robust growth in passengers, traffic and capacity, with only Norwegian Airlines showing a reduction in load factor. As in 2012, Norwegian is showing aggressive expansion of capacity in response to strong demand in recent years, at the expense of short-term load factor reduction. A full analysis of Low Cost Carriers is covered in Section 3.6.

According to Airline Business, passenger numbers among the core European flag-carriers of Air France, British Airways, KLM, Iberia and Lufthansa have increased by 13 million since 2008 to ~200 million in 2013. However, over the same period, passenger numbers across the five biggest European LCCs, easyJet, Norwegian, Ryanair, Vueling and Wizz Air, increased by more than 70 million. This demonstrates how LCCs have grown in recent years as they take over the short-haul market[28].

Table 3.7: Top 25 European Airlines ranked by RPKs in 2013

Airline	Passenger Data				% change vs. previous year			
	Passengers Boarded (million)	Traffic RPK (million)	Capacity ASK (million)	Load Factor %	Pax	Traffic	Capacity	PLF Pts
Lufthansa	76.3	153,334	193,807	79.1	1.4	2.3	1.0	1.0
Air France	47.8	136,435	165,350	82.5	-5.5	0.5	-0.8	1.0
British Airways	40.0	131,333	161,444	81.3	6.3	3.9	2.0	1.5
Ryanair	81.7	100,000	120,000	83.0	3.0	3.8	2.4	0.8
Turkish Airlines (non-EU)	48.3	92,003	116,423	79.0	23.6	23.2	21.1	1.3
KLM Royal Dutch Airlines	26.6	89,039	103,793	85.8	3.1	3.2	3.0	0.1
EasyJet	60.8	67,573	74,223	91.0	4.1	3.6	2.8	0.7
Aeroflot Russian Airlines (non-EU)	20.9	60,226	76,429	78.8	18.4	19.2	17.8	0.9
Air Berlin	31.5	48,575	57,251	84.8	-5.4	-3.6	-5.1	1.3
Transaero Airlines (non-EU)	12.5	47,018	56,235	83.6	21.0	14.7	13.1	1.1
Iberia	10.6	41,493	52,429	79.1	-28.8	-16.5	-14.0	-2.4
Virgin Atlantic Airways	5.9	39,538	50,331	78.6	8.1	0.3	-0.3	0.5
Alitalia	24.0	35,570	47,700	74.6	-1.2	-1.7	-1.7	0.0
Swiss (non-EU)	16.0	35,093	41,918	83.7	0.9	4.7	3.7	0.8
Thomson Airways	10.5	31,575	34,163	92.4	-1.4	-1.6	-2.0	0.4
SAS	25.4	28,854	39,202	73.6	-0.1	3.8	6.0	-1.5
TAP Portugal	10.7	28,152	35,451	79.4	4.9	3.4	0.0	2.6
Norwegian (non-EU)	20.7	26,881	34,318	78.3	17.1	32.1	32.4	-0.2
Finnair	9.3	24,776	31,162	79.5	5.6	5.1	2.6	1.9
Condor	6.8	24,621	27,322	90.1	2.8	3.5	1.2	2.0
Thomas Cook Airlines	6.1	19,809	21,285	93.1	-10.3	-11.2	-10.2	-1.0
Air Europa	8.7	19,427	22,931	84.7	7.3	10.5	6.9	2.8
Wizz Air	13.5	18,000	21,000	86.1	11.6	12.5	13.5	0.4
Austrian	11.3	17,705	22,528	78.6	-1.6	-1.4	-2.7	1.1

[28] Airline Business: World Airline Rankings 2014, August 2014

Airline	Passenger Data				% change vs. previous year			
Vueling Airlines	17.2	17,109	21,485	79.6	16.4	24.9	21.9	1.9
Total Top 25	**643.1**	**1,334,139**	**1,628,180**	**82.4**	**3.6**	**4.4**	**3.5**	**0.8**

Source: Airline Business: World Airline Rankings 2014, August 2014
* Denotes airlines where Airline Business acknowledges an estimation of traffic figures due to availability of data
Highlighted rows show low cost carriers.

3.4.3 North America

The merger of American Airlines and US Airways in 2013 means that consolidation of the US legacy market is nearly complete with the number of legacy carriers in North America greatly reduced from 2008 when Northwest's merger with Delta began the recent trend of consolidation.

IATA reported that its North American-based airlines achieved a collective year-on-year RPK increase of 2.3% in 2013 over 2012, ahead of a seat capacity increase of 2.0%. Average load factors increased slightly to 83.4% compared to 82.9% in 2012[29].

As noted earlier, Load factors continue to increase across the US legacy carriers on the back of consolidation. Contrary to European LCC trends, load factors for US LCCs decreased in 2013. North America was by far the most profitable region in 2013, with airlines based in this region posting a total $12.3bn net profit, compared to $574m for European airlines and $1.3bn in the Asia-Pacific region.

The 2014 Airline Business World Airline ranking shows considerable fleet investment for United with 442 aircraft on order, more than any of the other US Majors. According to United, this includes wide-body, narrow-body and regional aircraft to both replace and expand the fleet[30]. Airline Business comments further on the product investments that US airlines have made in 2013, noting that stabilisation of the region following significant restructuring and consolidation since 2008 is now giving way to competition between the four remaining 'mega-carriers' of United, Delta, US and American. United Airlines invested $550m in on-board product between 2011 and 2013; Delta spent more than $3bn from 2010 to 2013 on experience-enhancing products such as airport lounges, lie-flat business class seats and in-flight Wi-Fi.

Table 3.8: 2013 Summary Data for U.S Major Airlines

	Passengers (millions)	Passengers YoY (%)	Load factor (%)	Load factor YoY (% points)	Operating aircraft	Aircraft on Order
Delta Air Lines	164.7	0	83.8	0	759	151
Southwest Airlines	133.2	-0.6	80	-0.2	676	295
United Airlines	90.3	-2.4	83.8	0.9	698	253
American Airlines	87	0.6	83.1	0.3	631	442

[29] IATA Air Passenger Market Analysis December 2013, accessed at www.iata.org

[30] United Airlines Press Release, 20 June 2013, accessed at https://hub.united.com/en-us/news/company-operations/pages/united-announces-a350-1000-order.aspx

	Passengers (millions)	Passengers YoY (%)	Load factor (%)	Load factor YoY (% points)	Operating aircraft	Aircraft on Order
US Airways	56.8	4.6	84.8	0.7	343	45
JetBlue Airways	30.5	5.2	83.7	-0.1	197	133
Alaska Airlines	19.7	6.5	86.1	-0.6	136	62

Source: Airline Business World Airlines Ranking 2013, August 2014 ; Blue shading highlights LCCs

There has been a similar drive by the North American LCCs of Southwest and JetBlue to compete on new metrics. Southwest are investing $200m on new interiors whilst JetBlue commenced premium service operations in June 2013.

3.4.4 Asia Pacific

Growth continued in the Asia Pacific region with a 7.1% increase in Revenue Passenger Kilometres matching the increase in Available Seat Kilometres. Load Factor in the region remained flat at 78%[31]. This follows economic growth in both China and Japan in the second half of the year, which in turn benefited the wider Asia Pacific region.

In terms of traffic, the Chinese carriers again showed strong growth in Revenue Passenger Kilometres (RPKs) through China Southern (+8.6%) and China Eastern (+10.4) and Air China (+8.6%) all driving the region forward. Top-tier legacy airlines such as Singapore Airlines, Qantas Airways, Cathay Pacific and All Nippon Airways (ANA) also remain in the top 25. Similarly to 2011 and 2012, the Chinese domestic market remained the strongest in the region driven by demand. Traffic growth was 11.7% compared to 2012, while domestic growth in Japan reached 5.2% as a result of government stimuli that has increased propensity to travel.[32]

In terms of capacity, the three major Chinese legacy carriers of Air China, China Southern and China Eastern are comfortably established within the top 15 in the world (see Table 3.5).

The Asia Pacific region has traditionally been the most profitable region in the airline industry; however, 2013 saw both operating and net profits decline amid capacity growing at a faster rate than passengers. This is demonstrated by the three major Chinese legacy carriers who each posted lower profits in 2013 than in 2012. Japan Airlines posted profits in excess of $1.6bn, the highest in the World Rankings (excluding Delta's posting, which included significant tax relief), but this was still $400m down on 2012.

Qantas remains the largest airline group in the region by revenues, and returned to (marginal) profit in 2013 following consolidation efforts: seat capacity reduced 2.8% in 2013. At the other end of the spectrum, Air India and Jet Airways each posted a further year of losses, although each continues to grow capacity to take over routes vacated by Kingfisher.

[31] IATA Air Passenger Market Analysis December 2013, accessed at www.iata.org

[32] Airline Business – World Airline Rankings 2014

Legacy airlines in the region have already had to adjust to the rise of low cost carriers generating competition on short-haul routes. However, there is now a trend for low cost carriers, such as AirAsia X, Scoot and Cebu Pacific, to operate long-haul routes in south-east Asia. Each of these carriers has wide-body aircraft on order with the view to imposing themselves on this market.

3.4.5 Middle East

According to IATA figures, Middle Eastern carriers again recorded strong passenger traffic growth in 2013. RPK demand increased by 11.4% over 2012 figures, compared to a capacity growth (ASK) of 12.0%, with a corresponding increase of 0.1 percentage points in passenger load factor to 77.6% for the year[33].

In financial terms, the collective revenues for Middle Eastern carriers in the leading 150 airlines rose by nearly 10% in 2013. The largest of these carriers, Emirates, reported US$1.1bn net profit, a 32% increase over 2012.

Expansion of these airlines is set to continue beyond 2013 as it is reported that a total of 355 wide-body aircraft were ordered by the carriers at the Dubai air show in November 2014[34]. Each has also grown in 2013 by forming partnerships, such as Etihad with Darwin Airline, JAT Airways and Jet Airways, and Qatar Airways finalising its Oneworld alliance membership in October 2013.

Emirate's Low Cost arm, Flydubai, also prospered in 2013 with a 38% growth in passengers carried. In October 2013, it adopted a 'hybrid' business model, including Business class seats on numerous routes.

3.4.6 Latin America

Carriers in this region experienced passenger traffic (RPK) growth of 6.3% in the year on a capacity (ASK) growth of 4.5%. The load factor for the region increased from 77.4% in 2012 to 78.0% for 2013[35].

Following recent years of consolidation, South American carriers have made positive steps in 2013 to signal a move to compete on global routes. Avianca and Volaris both debuted on the New York Stock Exchange; Viva Aerobus has ordered 52 Airbus A320 aircraft signalling strong confidence in investment returns; and Azul planning to expand operations with its first international routes to the United States.

The strong economic performance of countries like Colombia, Peru and Chile has driven international business-related travel, whilst the Brazilian domestic market (which itself has shown strong growth in recent years) flattened in 2013 with a 0.8% increase over 2012 as domestic consumption stagnated. The Brazilian domestic market is the third largest in the world[36].

The major airlines in the region all continued to contribute to the strong growth in the market, with LAN Airlines (9.3%), Avianca (6.6%), Aeromexico (4.6%) Copa Airlines (9.0%) and Aerolineas Argentinas (4.9%) all reporting increased passenger numbers in 2013.

[33] IATA Air Passenger Market Analysis December 2013, accessed at www.iata.org

[34] http://fortune.com/2013/11/22/get-ready-for-middle-east-airline-domination/

[35] IATA Air Passenger Market Analysis December 2013, accessed at www.iata.org

[36] "Top five airline stories in Latin America in 2013", 31 December 2013, accessed at FlightGlobal.

TAM has continued re-structuring following its merger with LAN to form LATAM in 2012, with passengers and ASKs reducing in 2013 compared to 2012.

3.4.7 Africa

Overall, African carriers reported robust growth in passenger traffic (RPKs) of 5.1% in 2013, following a strong performance in 2012. Capacity increased by 4.5% year-on-year, while load factors rose to an average of 69.9% from 67.1% a year earlier. However, the position of African carriers in the World Rankings and their growth relative to those in other emerging markets demonstrates an unrealised potential of the region in terms of total market and that served by home carriers.

IATA reports that the demand backdrop for carriers in the region is strong, but some parts of the continent have shown weakness, including the South African economy which experienced a slowdown towards the end of 2013.[37]

The major legacy airlines in Africa reported steadier passenger growth results in 2013 compared to the diverse pattern of 2012. South African Airways, the largest African carrier, posted an increase in RPKs of 1.0%. Egyptair posted RPK growth of 2.2%. Ethiopian Airlines continues its impressive growth trajectory, increasing RPKs by 13.9% (down from 23% in 2012). Kenya Airways has continued its decline, posting a 2.8% contraction in 2013, which was not helped by a fire at Nairobi's Jomo Kenyatta International airport in August 2013 that affected operations.

However, the profitability of these airlines continued to raise concerns in 2013 as South Africa Airways, Egyptair and Kenya Airways all posted net losses, as they did in 2012. The exception was Ethiopian Airlines, which more than doubled its operating profit and nearly tripled its net profit compared to 2012.

The same key issue continued to impact on the region's air travel demand in 2013: (slow progress on liberalising African skies with restrictive bi-laterals still in force on many major markets). In addition to this, the region's carriers face increasing competition from overseas airlines.

The weakness of Africa's national carriers has meant that airlines from outside Africa have continued to expand significantly to the Continent. According to a Flightglobal Analysis article, 80% of intercontinental traffic between Africa and the rest of the world is controlled by non-African carriers. In November 2013, the top carriers on routes between Western Europe and Africa, in capacity terms, were Air France, British Airways and KLM. Whilst on routes between Africa and the Middle East, Emirates dominate the market, followed by Qatar Airways, Egyptair and Etihad Airways. [38]

3.4.8 Global Airline Alliance Developments

2013 saw the continuation of the three main airline Alliances – Star Alliance™, SkyTeam® and Oneworld® - although many world airlines continue to be unaligned.

The latest airline alliance member lists are detailed in Figure 3.11 below; there are no pending members at the time of writing.

[37] IATA Air Passenger Market Analysis – December 2013, accessed at www.iata.org

[38] FlightGlobal Analysis: Africa's tortuous liberalisation journey, 11 February 2014

Figure 3.11: Global Alliance Membership (as of July 2014)

Source: Star Alliance, SkyTeam, Oneworld (Fact Sheets and website information published as of 20 August 2014)

Table 3.9: Global Alliances Summary (as August 2014)

Global Alliances	SkyTeam 2013 *(2012)*	Star Alliance 2013 *(2012)*	oneworld 2013 *(2012)*	Total 2013 *(2012)*
Member Airlines	20 *(19)*	27 *(28)*	15 *(12)*	62 *(59)*
Pending new members	0 *(1)*	0 *(0)*	0 *(5)*	0 *(6)*
Number of aircraft	3,054 *(2,853)*	4,456 *(4,701)*	3,324 *(3,343)*	10,834 *(10,897)*
Number of employees	481,691 *(414,686)*	408,998 *(452,590)*	391,968 *(277,500)*	1,282,657 *(1,144,776)*
Passengers per year (million)	612.0 *(569)*	618.2 *(772.4)*	507.0 *(341.5)*	1,737 *(1,628)*
Total Revenue (in USD billion)	167.9* *(162.5)**	170.3 *(198.8)*	142.6 *(114.5)*	480.8 *(475.8)*
Daily departures	16,323 *(15,189)*	>18,500 *(21,900)*	14,011 *(8,837)*	30,334 *(45,926)*

Global Alliances	SkyTeam 2013 *(2012)*	Star Alliance 2013 *(2012)*	oneworld 2013 *(2012)*	Total 2013 *(2012)*
Revenue per passenger (USD)	274.3 *(285.6)*	275.5 *(273.3)*	281.3 *(335.2)*	
Departures per aircraft per day	5.3 *(5.3)*	4.2 *(4.7)*	4.2 *(3.6)*	
Passengers per departure	102.7 *(102.6)*	91.6 *(99.1)*	99.1 *(105.9)*	
Employees per aircraft	157.7 *(145.4)*	96.3 *(97.9)*	117.9 *(83)*	
Passengers per employee	1,270 *(1,372)*	1,511 *(1,580)*	1,293 *(1,230)*	
Revenue per departure (USD 000s)	28.2 *(29.3)*	25.2 *(24.9)*	27.9 *(35.5)*	

Source: Latest alliance websites/fact sheets - *SkyTeam revenues estimated from individual airline revenues as reported on Flightglobal.

Star Alliance remained the largest alliance in terms of aircraft, passengers and revenues, although the gap to the other alliances was greatly reduced in 2013. In 2013 and to-date, only one airline has joined Star Alliance – Air India, whose membership was originally scheduled for 2009 but was delayed when the invitation to join was suspended. TAM and US Airways (following their merger with American Airlines) left in early 2014.

The addition of Garuda Indonesia to SkyTeam in March 2014 was the only membership change to the alliance in 2013 and to date.

The Oneworld alliance membership gained Qatar, TAM Airlines and SriLankan Airlines in 2013. The inclusion of Qatar as the first Gulf carrier to join an alliance is considered a milestone, although the remainder of the 'Big Three' Gulf carriers, Etihad and Emirates, have not showed any inclination to follow suit. The Oneworld alliance also gained US Airways as a member affiliate following its merger with American Airlines.

In terms of size and key indicators, an analysis of the latest traffic and financial data available is shown in Table 3.9 above. As was the case in 2011 and 2012, Oneworld alliance members achieved the combined highest revenue per passenger. However, a sharp decrease in revenue per departure has seen them lose out to SkyTeam in this metric. This reflects investment in capacity expansion and passengers amongst the member airlines that has not yielded proportionate profit increase to date.

Alliances between legacy carriers continue to be the method by which most major airlines seek to reduce costs and increase their reach and market share. This is expected to remain the chosen route for such airlines until a situation is reached whereby nations no longer retain an interest in who owns the world's airlines. When that happens, there is likely to be a rapid contraction in the number of major airlines so that it would resemble the automobile industry or many other industries (including international shipping) where the result would be a handful of truly large multinational airlines, often based in low taxation territories with as much of their labour costs as possible contracted out to low-wage economies.

3.5 Regional Airlines

Regional airlines tend to operate, on average, small, sub-100 seat regional jet/turboprop aircraft. Many of these airlines operate feeder services to hub airports from regional points and operate thinner domestic and intra-continental routes. However, some regional airlines adopt a full-service 'legacy' approach to operations and marketing (particularly those feeding the hubs of their commercial partners), whilst others adopt concepts commonly found as part of the low-cost model such as a 'no-frills' service.

Table 3.10 below shows the 2012 capacity increases for the top 25 regional airline operators worldwide.

Table 3.10: Top 25 Regional Airlines Worldwide in 2013

		Traffic Capacity (RPK)					
Rank	Operator	2013	2012	% chg (2013 v 2012)	% chg (2012 v 2011)	Country	Airline group majority ownership
1	Express Jet	27,115	25,548	6.2	3.5%	USA	SkyWest
2	Sky West	24,061	22,835	5.4	16%	USA	
3	Envoy (American Eagle)	14,620	15,484	-5.5	23%	USA	AMR American Airlines
4	Endeavour Air	9,677	11,223	-13.7	7%	USA	Delta
5	Republic Airlines	7,825	7,892	-0.8	19%	USA	
6	Air Canada Jazz	6,700	6,596	1.6	-3%	Canada	Air Canada
7	Mesaba /Pinnacle Airlines*	6,468	5,168	11.7	53%	USA	Pinnacle Airlines
8	Lufthansa CityLine	5,200	-	2	-	Germany	
9	Tianjin Airlines	8,356	5,833	43.2	36%	China	Hainan Airlines
10	Flybe	3,735	3,067	8.8	-12%	UK	Flybe Group
11	Horizon Air	3,480	3,362	3.5	-2%	USA	
12	KLM Cityhopper	4,018	4,024	-0.1	5%	Netherlands	KLM
13	Aeromex Connect	-	4,335	-	15%	Mexico	Aeromexico
14	Air Wisconsin	3,446	3,368	2.4	8%	USA	
15	Shuttle America	6,050	5,840	3.6	18%	USA	

		Traffic Capacity (RPK)					
Rank	Operator	2013	2012	% chg (2013 v 2012)	% chg (2012 v 2011)	Country	Airline group majority ownership
16	Trip	3,344	3,890	-14	47%	Brazil	Azul
17	Qantas Link	3,414	3,404	0.3	6%	Australia	Qantas
18	Chautauqua Airlines	2,694	2,499	7.8	-17%	USA	
19	PSA Airlines	2,969	3,048	-2.5	8%	USA	US Airways
20	GoJet	4,067	3,453	17.8	26%	USA	
21	Bangkok Airways	2,750	-	19.6	-	Thailand	
22	Brit Air	2,251	2,046	10	-3%	France	
23	Iran Aseman Airlines	3,064	3,125	-2.5	3%	Iran	
24	Compass Airlines	4,556	4,765	-4.3	-9%	USA	Delta
25	Air Nostrum	2,114	2,522	-17.8	-13%	Spain	

Source: Flight Global
Note: Flybe has been included in the Low Cost Carriers analysis as the airline is a member of the European Low Fare Airlines Association (ELFAA)

3.5.1 United States

The U.S. remains the largest market for regional airline services with 13 of the top 25 positions in the above table from U.S. regional carriers. It is also important to note that the top 5 positions are all U.S. carriers which are unchanged from 2012.

Despite a reduction in growth in 2013, U.S. regional airlines as a group experienced growth of 1.9%. Most of the carriers in the top-25 experienced slight growth in 2013 with the exception of GoJet who experienced a 17.8% increase above their 2012 RPK. This may be due to the Trans States Holding Company's expansion of the aircraft fleet. The only airline to post a significant reduction in RPK was Endeavor Air which was still recovering from the reorganisation of the company throughout 2012.

3.5.2 Europe

According to Flightglobal, in 2013, five of the top-25 regional airlines carriers were European with each airline showing improvement since 2012. The exception of this is Air Nostrum from Spain which has reduced by 17.8% RPK since 2012. This is following on from a 13% reduction in RPK in 2012 and is attributed to the economic downturn. Regional France which was present in the 2012 top-25 merged with Brit Air in March 2013 and this resulted in a 10% increase in RPK for the airline which is present in the top-25 for 2013.

3.5.3 Rest of the World

Outside of North America and Europe, the regional airline that has increased their RPK significantly since 2012 is Tianjin Airlines of China. The airline increased their RPK value by 35.5% in 2012 and has further increased this by 43.2% in 2013. The airline has been increasing their routes and also their aircraft fleet to ensure they are the top regional airline in the Asia-Pacific region. Another airline which has had a significant increase in RPK is Bangkok Airways. They have improved by 19.6% which shows there is continued improvement in the air transportation market in the Asia-Pacific region.

Aeromexico Connect, Air Canada Jazz and Qantas Link have not made huge improvements since 2012 however they are holding their positions in the top-25 for each of their respective regions.

Following the merger of Azul Brazilian Airlines and Trip Brazil in 2012 there was a significant increase in RPK of 47.2%. Growth has reduced by 14% in 2013 but IATA[39] has reported that regional traffic in Brazil struggled in the first 3 quarters of the year.

3.6 Low Cost Carriers

3.6.1 Overview

It should be recognised that there is no longer a clear dividing line between legacy carriers, regional carriers and low cost carriers. Most airlines can easily be categorised into one or the other groupings, but many overlap the once-clear distinctions. Some legacy airlines offer a set of low fares on otherwise standard services (e.g. British Airways' hand baggage only fares), while some of the low cost carriers have begun to increase the number of legacy-style services they offer. For example, easyJet offers a flexible ticketing option and reserved seats on all flights whilst Norwegian Air Shuttle offer frequent flyer benefits.

The traditional characteristic of a low-cost airline is that they compete on price alone. However, with many airlines now competing in the market, the need to diversify from this has grown. For many, this includes offering additional services, at a premium, while others, such as Ryanair, have cut their service down to the basics to be as economically efficient as possible. A further example of this is Norwegian Air Shuttle, who continues to promote a new approach to low-cost travel as they offer a 'high-end low-cost' product. This includes investment in a modern fleet for quieter (and more efficient) travel, a limited selection of in-flight entertainment over on-board WiFi for free (where additional services can be purchased) and a focus on customer service.

However, Airline Business notes that the "model dynamics vary across the regions, between those looking to break through in Central America, the rapid spread into new markets in Asia and courting of more up-market passengers in Europe"[40]

Further diversification can be seen on route development, where there is a trend for LCCs to operate long-haul, which has previously been considered the hallmark of legacy carriers. Airline Business reports in the World Airline Rankings 2014 profile that the potential of Asia-Pacific's low-cost long-haul market is ready to

[39] IATA: Passenger Demand Moderates in November, Press Release 3 13/01/14

[40] Airline Business Low Cost Carriers 2014, June 2014

develop, whilst, in Europe, Norwegian Air Shuttle began operating from Scandinavia to both east and west coast USA as of May 2013.

Common to all LCCs, is the ability to start and drop routes at very short notice; For example, Ryanair dropped its Lisbon-Faro route only 3 days after launch in April 2013, emphasising the flexibility of the carrier.

3.6.2 Europe

Table 3.11 shows how the fifteen largest European low cost airlines fared in 2013 compared to 2012, in terms of available seat-kilometres. The core list of LCCs has been taken from Innovata, with additions taken from Airline Business's categorisations in their 2014 Analysis report (Iberia Express) and those considered by Mott MacDonald to be core LCCs (Jet2, Jetairfly).

It should be noted that several of the airlines listed in Table 3.11 are considered to operate a 'leisure' model, which commonly involves a hybrid of charter and scheduled (often low cost) services. Examples of these include Monarch Airlines and SunExpress – both of which are also discussed in Section 3.7 - Charter Airlines.

Table 3.11: Largest fifteen European Low Cost Carriers by scheduled ASK in 2013

Airline	State	Available Seat-km (million) 2012	Available Seat-km (million) 2013	Increase in seat-km (million)	% increase	% share of increase
Ryanair	Ireland	115,510	121,714	6,204	5.4%	18.2%
easyJet	UK	70,855	75,293	4,439	6.3%	13.0%
Air Berlin	Germany	60,327	57,251	-3,076	-5.1%	-9.0%
Norwegian Air Shuttle	Norway	24,232	32,750	8,518	35.2%	25.0%
Iberia Express	Spain	2,105*	25,758	- *	- *	- *
Vueling Airlines	Spain	17,656	21,502	3,846	21.8%	11.3%
Wizz Air	Hungary	17,664	19,415	1,751	9.9%	5.1%
Pegasus Airlines	Turkey	15,082	18,492	3,410	22.6%	10.0%
Monarch Airlines	UK	13,287	15,014	1,727	13.0%	5.1%
TUIfly	Germany	12,345	12,056	-290	-2.3%	-0.9%
Jet2.com	UK	9,302	11,630	1,402	14.9%	6.8%
Transavia	Netherlands	9,299	10,722	1,423	15.3%	4.2%
germanwings	Germany	8,344	9,851	1,507	18.1%	4.4%
Jetairfly	Belgium	7,583	8,941	1,358	17.9%	4.0%
SunExpress	Turkey	5,598	6,498	899	16.1%	2.6%
Total (15)		**390,219**	**445,623**	**34,044****	**8.7%****	**100.0%**

Source: Innovata, scheduled Available Seat Kilometres
Notes: Airlines considered as LCC have been compiled based on Innovata, Airline Business and Mott MacDonald's assessment.
* Operations commenced in March 2012, therefore a full year on year comparison is not applicable.
** Excludes Iberia Express.

Overall, there was a significant increase of 8.7% in seat-kilometres advertised in 2013 compared to 2012 for the Top 15 European LCCs, excluding the results of Iberia Express who did not operate for a full year in 2012.

Ryanair remains at the top of the rankings with a further 5.4% increase in capacity year on year. This is, in part, due to increased coverage – serving 1,611 routes from 57 bases in 2013 compared to ~1,500 from 51 in 2012[41]. They lead in terms of market share in Spain (21%), Italy (22%), Ireland (44%) and Poland (23%).

EasyJet, Europe's second largest low cost carrier, achieved its 6.3% capacity growth primarily by providing additional services on routes in the UK (growth of 1.33bn ASKs), Switzerland (1.14bn) and Italy (0.58bn), according to Innovata. Compared to Ryanair who prefer to operate out of secondary airports in order to keep fares down, EasyJet had a 24% capacity share on the top 100 EU city pair routes in 2013.[42]

Iberia Express, a LCC off-shoot of Iberia and subsequently an IAG member, began operations in March 2012 in response to the weakening of demand for legacy services in Spain, previously taken advantage of by Vueling alone. Following a modest start in 2012, 2013 has seen them expand capacity significantly as they continued to take over routes vacated by Spanair (who ceased operations in February 2012) and picked up domestic and international feeder routes for main Iberia services. Iberia Express has also benefited from the capacity cuts of Ryanair and EasyJet in the Spanish market in 2013; EasyJet cut 24 routes from Madrid in summer 2013 versus summer 2012. Notably, the carrier has said that it was profitable over its first year of operation.[43]

Norwegian Air Shuttle posted the highest percentage ASKs capacity growth for 2013, at an impressive 35.2%. This was supported by significant route expansions – from 308 at year end 2012 to 391 at end of 2013. At the other end of the growth spectrum, Air Berlin posted the largest capacity contraction in 2013 of 5.1% as increased competition continues to drive them to consolidate. Air Berlin has been the most notable loser to a growing trend of charter airlines biting into the LCC market share by offering scheduled flights to holiday destinations around Europe.

The European Low Fares Airline Association (ELFAA) provides more detailed operating figures for its ten member carriers:

Table 3.12: ELFAA Members 2013 Data

		Pax (mill)	PLF %	Countries served	Destinations served	Routes	Daily flights	Fleet size	Average Fleet age	Employees
Ryanair	Ireland	81.4	83	30	185	1600	1,600	303	5	9,000
easyJet	UK	61.4	89.3	34	139	689	1,163	217	5.3	9,089
Norwegian	Norway	20.7	80	33	128	395	423	86	4.5	3,200
vueling	Spain	17.2	79.6	33	126	252	335	66	7.2	2,015
Wizz Air	Hungary	13.5	86.1	35	95	303	238	45	4.2	1,764

[41] Ryanair Full Year Results (2013 and 2012) available at www.ryanair.com

[42] EasyJet Full Year Results – Analyst and Investor Presentation, 19 November 2013, accessed at www.corporate.easyjet.com

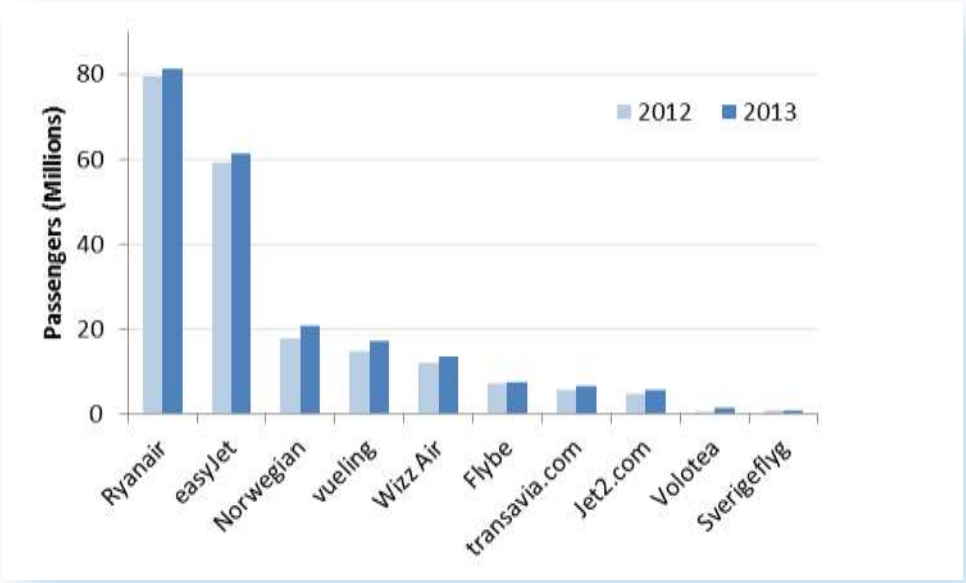
[43] Iberia Analysis Article by CAPA, 16 May 2013, accessed at http://centreforaviation.com/analysis/iberia-a-new-hammer-can-crack-an-old-nut-but-sometimes-the-new-ones-taste-better-109589

		Pax (mill)	PLF %	Countries served	Destinations served	Routes	Daily flights	Fleet size	Average Fleet age	Employees
Flybe	UK	7.5	59	14	73	173	402	98	5.6	2,193
transavia.com	Netherlands	6.5	90	25	99	159	126	30	9.1	1,217
Jet2.com	UK	5.6	90.7	19	57	213	178	50	22	2,600
Volotea	Spain	1.4	N/A	7	57	115	N/A	12	N/A	350
Sverigeflyg	Sweden	0.8	72	3	16	18	61	10	11.3	140
Total 2013		**216.0**	**84.0**				**4,526**	**915**	**6.4**	**31,461**
Growth 2013 vs. 2012		**6.7%**	**0.8%**				**3.8%**	**5.2%**	**-**	**7.2%**

Source: ELFAA

The passenger numbers are shown graphically in Figure 3.12 below show convincingly the importance of the two main carriers, Ryanair and easyJet who combined account for 66% of total passengers carried by ELFAA members.

Figure 3.12: ELFAA Airlines Passenger numbers 2013 vs. 2012 (millions)



Source: ELFAA

Passenger growth of 6.7% for ELFAA members in 2013 was above that reported by IATA for its European airlines as a whole of 3.8%, which includes legacy, low-cost and regional carriers. Of note is that all ELFAA members showed a growth in passengers carried in 2013 compared to 2012.

The number of aircraft operated by these nine airlines grew by 5% in 2013, with the composition of the ELFAA airlines fleet shown in Table 3.13. These figures represent the state of play at the end of each reported year.

Table 3.13: ELFAA Airline Fleets

	2011	2012	2013	% variance (2013 v 2012)
Jets				
A319 family	168	159	157	-1%
A320 family	115	146	171	17%
B717	0	9	12	33%
B737-300	37	37	41	11%
B737-700	12	10	9	-10%
B737-800	358	390	405	4%
B757-200	12	11	11	0%
B787	0	0	3	-
EMB190/195	14	26	26	0%
EMB170/75	6	11	13	18%
Subtotal	**722**	**799**	**848**	**6%**
Turboprops				
DH8-400	50	47	45	-4%
ATR 42	2	2	2	0%
ATR 72-500	14	15	17	13%
SF 2000	2	2	4	100%
SF 340	4	4	1	-75%
BAE ATP	0	1	0	-100%
Subtotal	**72**	**70**	**69**	**-1%**
Total	**794**	**870**	**917**	**5%**

Source: ELFAA

The general trend among low cost carriers was for fleet expansion and a greater proportion of jets in 2013. With the exception of Volotea, all of the ELFAA members either increased or maintained fleet numbers in 2013. EasyJet continued adding to its Airbus A320 fleet to add additional capacity. Norwegian added 14 737-800 aircraft to its fleet as well as three 787's to serve their new long haul market.

The most significant developments for individual European LCC airlines in 2013 were as follows:

- Ryanair (Ireland), the largest European low cost carrier, has shown diversification from its long-held ultra-low-cost principles in 2013, as booking restrictions have been eased and customer satisfaction a target for improvement. It ordered 175 new Boeing narrow-bodies in 2013 to support its target of lifting passenger numbers by 40% over the next five years to 112 million. Six new bases in Fez, Marrakesh, Zadar, Krakow, Chania and Eindhoven.
- EasyJet (United Kingdom) continued to increase the size of its fleet and range of destinations by opening two new bases at Hamburg and Naples following the closure of its Madrid base. They also

acquired flybe slots at Gatwick. Despite dropping out of the World Top 25 airlines by revenue, registering at 26 in 2013, revenues and profit were up with an annual profit of US$621m, up from US$404m in 2012.

- There has been a trend for LCCs to provide "frills" and business-focused products as a means of differentiation, as well as competing with the retreating network carriers. LCCs are positioning themselves as viable alternatives – both in frequency and product.

3.6.3 Rest of the World

Table 3.14 below shows the 25 largest non-European airlines categorised as low cost by Innovata, with modifications made by Mott MacDonald following review of Flightglobal profiles. This shows how available seat kilometres have changed from 2012 through to 2013.

Table 3.14: Top 25 Largest Non-European Low Cost Carriers by capacity in 2013

		ASKs (millions)			
Airline	State	2012	2013	YoY Change (millions)	YoY Change (%)
Southwest Airlines	United States	172,123	181,950	9,827	5.7%
JetBlue Airways	United States	64,976	69,260	4,284	6.6%
Gol Transportes Aereos	Brazil	46,940	49,282	2,342	5.0%
Lion Airlines	Indonesia	36,461	43,687	7,227	19.8%
Westjet	Cananda	35,721	38,633	2,912	8.2%
Jetstar Airways	Australia	35,430	36,356	925	2.6%
AirAsia	Malaysia	27,656	30,821	3,165	11.4%
IndiGo	India	23,539	28,849	5,310	22.6%
AirTran Airways	Canada	34,855	28,485	-6,370	-18.3%
Spirit Airlines	United States	18,457	22,488	4,031	21.8%
Virgin America	United States	20,388	19,822	-566	-2.8%
AirAsia X	Malaysia	15,641	18,937	3,297	21.1%
SpiceJet	India	14,727	18,095	3,368	22.9%
Frontier Airlines	United States	21,574	17,923	-3,652	-16.9%
Volaris	Mexico	15,119	17,819	2,700	17.9%
Flydubai	UAE	12,462	16,149	3,687	29.6%
CEBU Pacific Air	Philippines	14,084	15,955	1,871	13.3%
Air Arabia	UAE	13,191	15,183	1,992	15.1%
Azul	Brazil	11,275	14,554	3,279	29.1%
Spring Airlines	China	10,823	12,791	1,968	18.2%
Allegiant Air	United States	10,693	12,665	1,972	18.4%
Thai AirAsia	Thailand	9,951	12,202	2,251	22.6%
Indonesia AirAsia	Indonesia	9,313	11,980	2,667	28.6%
InterJet	Mexico	9,251	11,278	2,028	21.9%
Tiger Airways	Singapore	9,016	11,110	2,093	23.2%

Airline	State	ASKs (millions) 2012	2013	YoY Change (millions)	YoY Change (%)
Total (25)		**693,667**	**756,274**	**62,607**	**9.0%**

Source: Innovata

The expansion of advertised seat-kilometre output by 9.0% in 2013 is slightly ahead of the increase by European low cost carriers. The most dramatic increases were by Flydubai (+29.6%), Azul (+29.1%) and Indonesia AirAsia (+28.6%), three relatively new and expanding low cost carriers. Southwest recorded the single largest capacity increase of the carriers in the Top 25 as it continued to take market share from consolidating network airlines.

The effect of mergers impacted the US market with the world's largest Low Cost Carrier Southwest Airlines increasing ASKs by 5.7% but its subsidiary Air Tran reducing ASKs by 18.3% following the same trend as 2012. There was, however, an overall net gain of seats as expansion of Southwest outpaced the removal of duplication on certain routes.

The largest two LCCs, Southwest and JetBlue, continued capacity growth in the stable North American region in 2013, posting growth of +5.7% and +6.6% respectively. JetBlue also grew in terms of passenger numbers, up 5.2%, whilst Southwest contracted 0.6%.

Frontier suffered significant capacity loss (-16.9%) in 2013, going against the general trend of global LCCs. Following its sale by Republic Airways Holdings, Frontier Airlines is to continue its transformation to an ultra-low cost airline with new owner Indigo Partners. The aim is to compete in the 'lowest fare' market that Spirit airlines have been thriving in – posting a 22% ASK growth in 2013. The acquisition of Frontier followed shortly after Indigo Partners announced they would be selling all shares held in Spirit.

Following a strong expansion in 2013 of 31.7% increase in ASKs, Virgin America reduced capacity marginally in 2013.

The largest Brazilian low cost carrier, GOL, increased available ASKs by 5.0 % in 2013 amid strong demand.

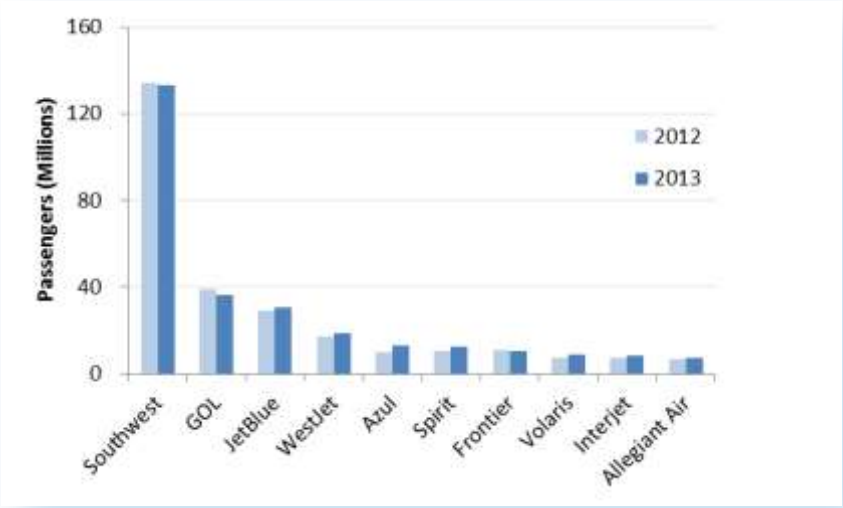
Each of the Asia Pacific airlines in the LCC Top 25 posted ASK and passengers carried growth in 2013 with LionAir remaining the strongest performer in both metrics. Airline Business reports that the low-cost market in the region is set to boom in coming years as Chinese policy shifts to promote development of home LCCs, which will stimulate the already strong market.

Air Asia increased ASKs by 11.4% and its long haul subsidiary Air Asia X increased ASKs by 21.1% amid increasing demand for long-haul low-cost services in the region. AirAsia X added new routes to Adelaide, Busan, Colombo and Malé, Jeddah and Shanghai in 2013, which accounts for the large ASK increase.[44]

In terms of passenger numbers, Figure 3.13 and Figure 3.14 show the Top 10 Low Cost Carriers in 2013 for the Americas and Asia Pacific regions respectively.

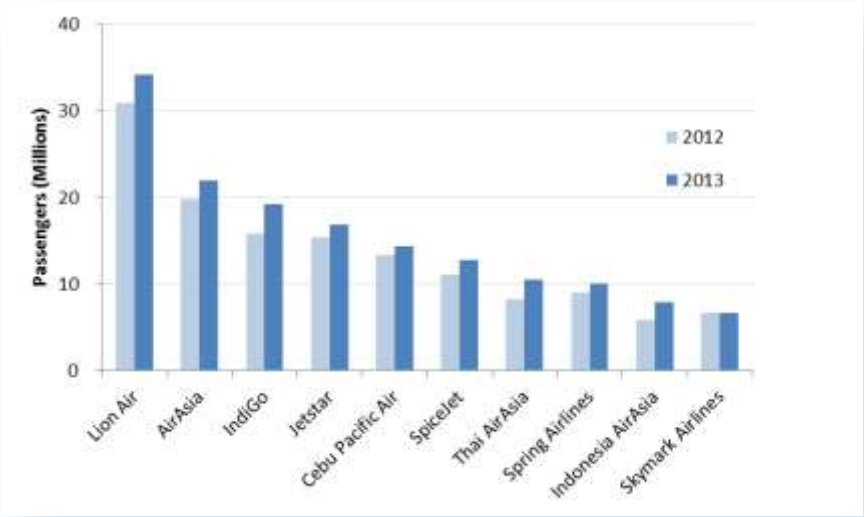
[44] Anna.aero analysis article on AirAsia X, 23 July 2014, accessed at http://www.anna.aero/2014/07/23/airasia-x-still-heavily-reliant-australian-market-dropped-10-29-routes-started-since-launch-2007/

Figure 3.13: Top 10 LCCs by passengers : The Americas



Source: Airline Business: LCC Report 2014, June 2014

Figure 3.14: Top 10 LCCs by passengers: Asia-Pacific



Source: Airline Business: LCC Report 2014, June 2014

3.7 Charter Airlines

3.7.1 Overview

Table 3.15 below highlights a (limited) selection of major worldwide charter airlines in 2013 in comparison with 2012. This list is not comprehensive and is based solely on those charter airlines where data was

available in the public domain at the time of publication. Nevertheless, this list is representative of the general charter industry growth in 2013.

Table 3.15: Selected Worldwide Charter Airlines Traffic Growth: 2013 vs. 2012

		Passengers (millions)			Revenue Passenger Kms (millions)		
Charter Airline	Region	2013	2012	% chg '13 vs '12	2013	2012	% chg '13 vs '12
Thomson Airways	Europe	10.55	10.70	-1.5%	31,575	32,073	-1.6%
Monarch Airlines	Europe	6.82	6.30	8.3%	15,281	14,854	2.9%
Condor	Europe	6.79	6.60	2.9%	24,612	23,779	3.6%
SunExpress	Europe (Non-EU)	6.70	7.70	-13.0%	9,777	10,398	-6.0%
Thomas Cook Airlines	Europe	6.08	6.78	-10.3%	19,809	22,298	-11.2%
Air Transat	N. America	3.33	3.86	-13.6%	16,000	18,522	-13.6%
Omni Air International	N. America	0.60	0.74	-18.5%	3,047	3,209	-5.1%
World Airways	N. America	0.16	0.18	-12.2%	1,033	1,269	-18.6%

Source: Flight Global

As previously mentioned in Section 3.6 - Low Cost Carriers, there are numerous leisure airlines operating a hybrid of charter and scheduled (often low cost) services. Examples of these include Thomson Airways, Monarch Airlines and SunExpress. Airlines with a significant or traditional charter offering are considered in this section; with a commentary offered on an airline-by-airline basis on their makeup trends in terms of charter/scheduled traffic, where applicable.

In common with 2012 and 2011, Thomson Airways remains the largest charter carrier in the world in both passengers carried on charter flights and charter RPKs. According to Flightglobal, Thomson Airways increased revenues in 2013 to $3,054m, up 2.8% from 2012 as net profit rose 9.9% to $301m.

Thomas Cook continued its decline in passengers carried and RPKs as the restructuring being undertaken in 2012 continued in 2013. However, consolidation has led to an improved financial performance with net loss at £207m in 2013 compared to £590m in 2012 and net debt reduced to £421m from £788m[45].

In contrast to its sister company, also owned by the Thomas Cook Group, Condor experienced solid traffic growth in 2013 (+2.9% passengers), but behind that of Monarch (+8.3% passengers), who had the highest growth rate. The rest of the selected charter airlines posted negative growth in passenger numbers and RPKs reflecting the continuing struggle of charter airlines as they compete against low-cost airlines and increased completion from network carriers.

Overall, there is an argument that the core business of leisure airlines, package holidays, is still viable. However, a trend for diversification has been necessary to safeguard against reliance on traditional charter operations to destinations such as Egypt and Africa, which were both politically unsettled in 2013[46].

[45] Thomas Cook Annual Report and Accounts 2013, accessed at http://www.thomascookgroup.com/annual-report-accounts-2013/

[46] FlightGlobal: Analysis: The leisure industry rises from its sickbed, 16 September 2013

Table 3.16: Charter Passengers at UK Airports 2013 vs. 2012

	2012	2013	% change 2013 v 2012	% share of Charter in 2013
Short-Haul				
European Union - West	12,680,744	11,972,668	-5.6%	62.3%
European Union - East	346,880	361,897	4.3%	1.9%
Other Western Europe*	2,654,424	2,617,568	-1.4%	13.6%
Other Eastern Europe	10,663	10,979	3.0%	0.1%
North Africa **	1,752,213	1,850,467	5.6%	9.6%
Subtotal	**17,444,924**	**16,813,579**	-3.6%	87.5%
Long-Haul				
Other Africa	135,690	123,221	-9.2%	0.6%
Near, Middle East	16,112	12,612	-21.7%	0.1%
Asia, Australasia	131,664	114,659	-12.9%	0.6%
North America	388,700	212,896	-45.2%	1.1%
Caribbean, Latin America	1,065,626	1,093,899	2.7%	5.7%
Subtotal	**1,737,792**	**1,557,287**	-10.4%	8.1%
Oil Rigs	780,575	840,611	7.7%	4.4%
Total Charter	**19,963,291**	**19,211,477**	-3.8%	100%
Total Scheduled	163,208,202	170,890,119	4.7%	
Total all international passengers	183,171,493	190,101,596	3.8%	
Charter as % share of international pax	**10.9%**	**10.1%**	**-0.8%**	

Source: UK CAA – accessed at www.caa.co.uk

* Including Greenland

** Including Cape Verde

Given the limited nature of traffic statistics covering the European charter market for 2013, a useful proxy is available from the UK CAA which provides a comparison between 2013 and 2012 of charter passenger traffic both in total and by destination from UK airports.

In the UK market at least, the charter industry declined by 3.8% in 2013, following a contraction in 2012 of 8.2%. Comparing this with scheduled traffic to and from the UK growing at 4.7%, and total international passengers at 3.8% in 2013, the decline in charter traffic is significant – highlighted by its continued cut in market share of UK air passenger traffic: 10.1% down from 10.9%.

Table 3.16 demonstrates that charter services remain strongest on routes to North Africa and Western Europe. For North Africa in particular, the strong preponderance of Inclusive Tour package holidays and no existing open skies agreement for many of the North African countries means that low cost carrier penetration is comparatively low and there are greater opportunities for growth.

All long-haul charter markets save for Caribbean/Latin America, were down year-on-year as long haul tourism destinations reported the impact of increasing UK Air Passenger Duty reducing the competitiveness of these destinations.

Table 3.17: Market Share (percentage of seats offered) by Region and carrier type

Region	Low Cost Carrier (LCC)	Full Service Carrier (Not in Alliance)/Charter	Full Service Carrier (In Alliance)
Africa	0.9%	6.9%	2.2%
Asia-Pacific	30.4%	44.6%	33.1%
Europe	31.6%	18.8%	24.5%
Middle East	1.71%	11.3%	2.2%
Latin America	5.8%	9.0%	7.2%
North America	29.5%	9.3%	30.9%
Total Shares	**100%**	**100%**	**100%**

Source: Innovate Data, 2013

Table 3.17 above shows the percentage of seats offered by region for Low Cost Carriers, Full Service Carrier (Not in alliance)/Charter and Full Service Carrier (In alliance). Seats supplied in the Asia-Pacific region are the highest for both types of Full Service Carriers (in Alliance/not in Alliance), however they fall below Europe for Low Cost Carrier in terms of seats offered. North America also has a high seat supply particularly for Low Cost Carrier airlines and Full Service Carriers (not in Alliance) . Africa has the lowest Low Cost Carrier seat allocation of all regions.

Table 3.18: Market Share (percentage of seats offered) by Region and carrier type

Region	Low Cost Carrier (LCC)	Full Service Carrier (Not in Alliance)/Charter	Full Service Carrier (In Alliance)	Total Shares
Africa	7.7%	51.8%	40.5%	100%
Asia-Pacific	22.0%	28.0%	50.0%	100%
Europe	31.8%	16.5%	51.7%	100%
Middle East	10.55%	61.0%	28.4%	100%
Latin America	20.2%	27.4%	52.4%	100%
North America	28.9%	7.9%	63.2%	100%

Source: Innovate Data, 2013

Table 3.18 shows the share in percentage that reflect the total seats supplied by region vs. the split of these seats between Low Cost Carriers, Full Service Carrier (Not in alliance)/Charter and Full Service Carrier (In alliance). In North America Full Service Carriers (In alliance) have the highest share of seats supplied at 63.2% while Full Service Carriers (Not in Alliance)/Charter held only a minority share of 7.9%. In Middle East the Full Service Carriers (In Alliance) have a share of 28.4% of the total regional supply thus the Full Service Carriers (Not in Alliance)/Charter dominate with a 61% share. In Europe Low Cost Carriers have the highest share in terms of seats allocated at 31.8% thereby being more common than LCCs in North America where their share was at 28.9%.

3.8 Cargo Airlines

3.8.1 Air Cargo Demand

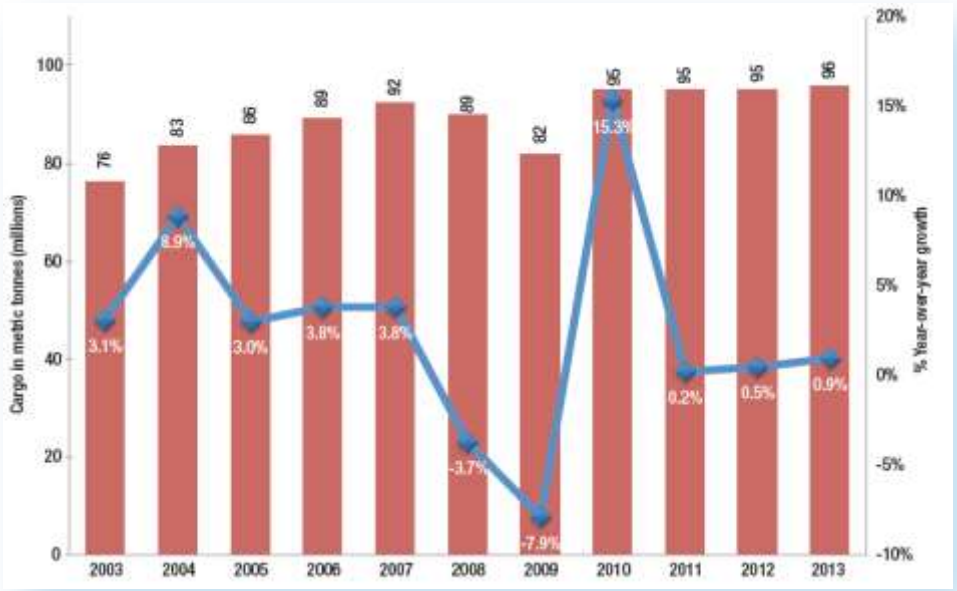
The IMF recorded a marked slow-down in growth of world trade volumes (goods and services) in 2012 (2.5%), which has continued in 2013 (3.0%). Again, growth in world trade volumes was two-speed with Advanced Economies achieving less growth than Emerging and Developing Economies for both imports and exports. According to IATA[47], air cargo transports goods worth in excess of $6.4 trillion on an annual basis; approximately 35% of world trade by value.

Table 3.19: World Trade Volumes (Goods and Services)

	Actual				Projection	
Year-on-Year % change	2010	2011	2012	2013	2014	2015
World Trade Volume (Goods and Services)	12.8	6.2	2.8	3.0	4.3	5.3
Imports – Advanced Economies	11.7	4.8	1.1	1.4	3.5	4.5
Imports – Emerging and Developing Economies	14.4	9.2	5.8	5.6	5.2	6.3
Exports – Advanced Economies	12.4	5.7	2.1	2.3	4.2	4.8
Exports – Emerging and Developing Economies	13.9	7.0	4.2	4.4	5.0	6.2

Source: IMF World Economic Outlook (April 2014), Table A9

Figure 3.15: Global Air Freight Tonnage – ACI Airport Throughput



Source: ACI World Airport Traffic Database 2014

[47] IATA Air Cargo overview, accessed 03 Septmber 2014 at http://www.iata.org/whatwedo/cargo/Pages/index.aspx

Figure 3.16: International Freight growth by major routes

Source: IATA Cargo eChartbook Q1 2014, accessed at www.iata.org ; acknowledgment to ODS

Worldwide cargo volumes have only increased marginally in 2011 and 2012 by 0.2% and 0.5% respectively. This trend is still continuing as there was only a 0.9% increase in 2013. The air cargo market continues to suffer as other competing markets such as road, rail and sea are cheaper modes of transport.

The beginning of 2013 saw a reduction in International freight in most markets, although the decline on the North Atlantic was not as pronounced as in other regions. This is a very similar trend to the markets in the beginning of 2012. A recovery was evident just after the dip in January 2013 but aside from a small positive variance in the North and Mid Pacific markets between September and November 2013 all markets remained weak.

IATA noted that growth was experienced on routes between the Middle East and Far East and between North America and South America which are rapidly developing marketplaces with expanding based airlines. However, routes between North America and Central America and between Europe and Africa remained in decline throughout much of the year. There was a notable recovery in the latter months of 2013 which is a similar trend to 2012 however routes such as North America to Central America and Europe to Africa mentioned above were still challenging.

3.8.2 North America

The U.S. is home to the world's two largest air cargo carriers FedEx and UPS. Together, they operate around one third of the global cargo aircraft fleet and accounted for over 50% of freight tonne-kilometres operated by U.S. carriers in 2013.

Table 3.20: Selected North American Airlines: Freight Tonne-Kilometres (FTKs) [millions] 2013 v 2012

Airline	2013	% chg vs 2012
FedEx	16,225	-0.2
UPS	10,889	1.2
Atlas Air	5,324	4.2
Delta Air Lines	3,430	-1.5
United Airlines	3,222	-10.3
American Airlines	2,681	3.7
Kalitta Air	1,994	10.9
Polar Air Cargo	1,725	2.9
Southern Air	1,625	-22.7
ABX Air	805	-2.1

Source: Airline Business Cargo 2013

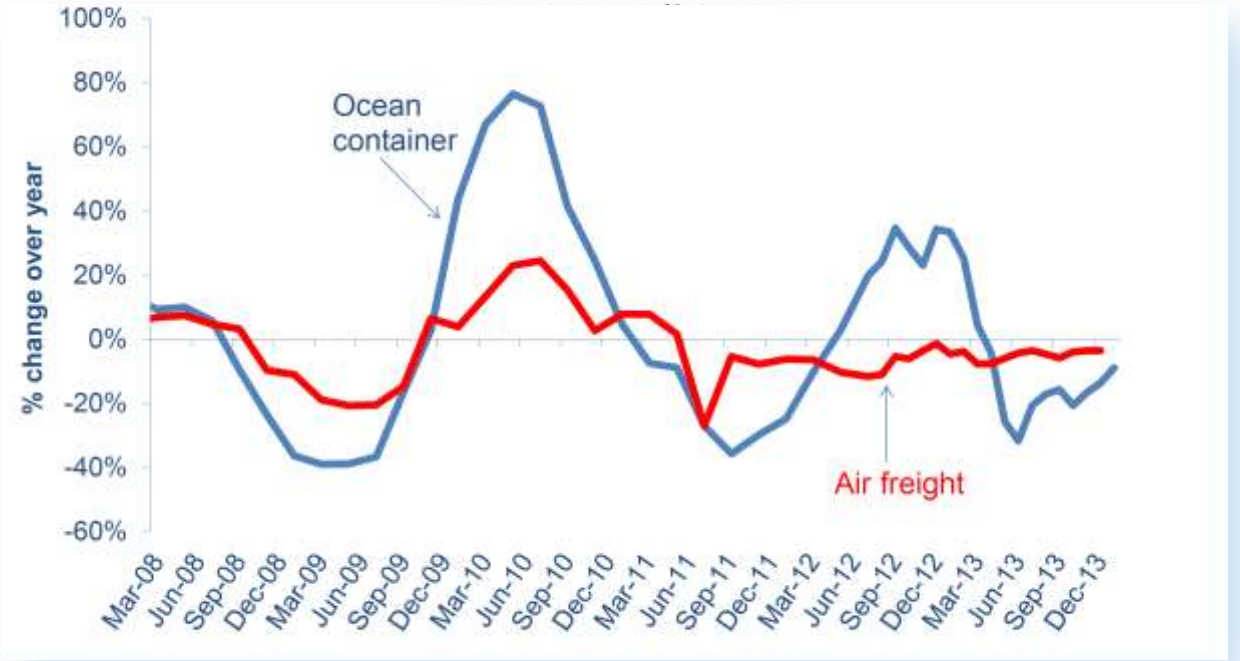
Table 3.20 shows a selection of North American airlines operating within all segments of the air cargo market. These carriers achieved mixed growth in 2013 compared with the previous year. Cargo integrator FedEx recorded marginal reductions in growth in 2013, while UPS reported a 1.2% increase in Freight Tonne Kilometres. This is above the growth rates of 2012 which represents a reasonable achievement given that closer to home manufacturing and competition between air freight, maritime freight and rail freight is ongoing. Air freight also has the risk of delay due to heavier security measures in place therefore other options are more readily considered.

Declines in growth were recorded for four airlines of which two are legacy carriers. Delta Airlines recorded a reduction of 1.5%, ABX Air 2.1%, United Airlines 10.3% and a significant decline in Southern Air of 22.7%. US Airways does not feature in the table above for this year as it dropped to 60th place in the top-100 cargo airlines due to a decline in growth of 9.6%. Cargo airline Kalitta Air an increased significantly by 10.9% compared to 2012 while Atlas Air also increased by 4.2%.

3.8.3 Europe

Annual freight traffic (FTK) recorded by the Association of European Airlines (AEA) recorded a positive increase of 2.8% in 2013, which is well above the decline suffered in 2012. Figure 3.17, below, reveals air freight has increased steadily since 2012 whereas freight carried by sea seen a huge decline in the first two quarters of 2013. However, freight by sea began to steadily pick up towards the latter end of 2013.

Figure 3.17: Ocean Container vs. Air Freight Growth



Source: IATA Cargo eChartbook Q1 2014, accessed at www.iata.org ; acknowledgement to Drewry and CASS

Growth in air freight was looking positive with signals of expansion in economic activity along with an increase of world trade growth in both Asia and the US.

Table 3.21: AEA Airlines Cargo Performance: Total Freight Tonne Kilometers (TFTK)

REGION (connecting to Europe)	TFTK (millions)			TFTK % chg 2013 v 2012
	2011	2012	2013	
Domestic (1)	73	64	58	-8.9%
Cross-border Europe (2)	765	760	778	2.5%
Total Europe (1+2)	838	823	836	1.6%
North Africa (3)	159	178	153	-14.1%
Middle East (4)	1,129	1,126	1,082	-3.9%
Intl Short/Medium Haul (2+3+4)	2,052	2,064	2,014	-2.4%
North Atlantic (5)	10,119	9,727	9,772	0.5%
Mid Atlantic (6)	1,893	1,963	1,940	-1.2%
South Atlantic (7)	2,654	2,357	2,454	4.1%
Sub Saharan Africa (8)	3,049	2,894	2,813	-2.8%
Far East/Australasia (9)	13,538	13,313	13,519	1.5%
Total Long Haul (5 to 9*)	31,770	30,635	31,221	1.9%
Total Intl (2 to 9*)	33,822	32,699	33,235	1.6%

REGION (connecting to Europe)	TFTK (millions) 2011	2012	2013	TFTK % chg 2013 v 2012
Total Scheduled (1 to 9*)	**33,895**	**32,762**	**33,293**	**1.6%**

Source: AEA Monthly Traffic and Capacity data, available at www.aea.be/research/traffic/index.html
(Freight traffic is measured in FTK (Freight Tonne-Km) on passenger and all-cargo services, excluding mail. *Long haul region 'Other' is not shown above, but is included in the total.)

Table 3.22: Selected European Airlines: Freight Tonne-Kilometres (FTKs) [millions] 2013 v 2012

	2013	% chg vs 2012
Air France-KLM	10,070	24.4
Lufthansa Cargo	8,731	0.0
Cargolux	5,282	19.0
British Airways	4,646	-5.0
Turkish Airlines	2,297	22.4
Swiss	1,533	3.2
Virgin Atlantic Airways	1,516	3.8
Iberia Group	1,007	-15.3
Scandinavian Airlines	630	13.9

Source: Flight Global Airline Business August 2013

AEA carriers achieved an increase in freight traffic of 1.9% on long-haul international routes compared with a 2.4% decline on international short and medium-haul routes, although the latter only accounted for 6% of total member airline traffic. The North Atlantic routes, accounting for 30% of FTK traffic, achieved a 0.5% increase in growth while, the largest market, Europe to Far East/Australasia (40% of total), recorded a increase of 1.5%.

Turkish Airlines saw a 22.4% increase in Freight Tonne Kilometres with Scandinavian Airlines seeing a significant increase from 2012 of 13.9%. The only European carrier from the above table to show significant decline was Iberia at 15.3%.

Europe's largest freight carrier, Air France-KLM posted a freight traffic increase of 24.4% over 2012. This can be attributed to the additional capacity and routes provided by Air France-KLM towards the latter months of 2013.

3.8.4 Asia Pacific

In 2013, the major Asia Pacific airlines with freight traffic suffered declines, as shown in Table 3.23 below. As a collective, the airlines shown in the table recorded a drop in FTKs of 0.6% compared to 2012.

Table 3.23: Selected Asia Pacific Airlines: Freight Tonne-Kilometres (FTKs) [millions] 2013 v 2012

	2013	% chg vs 2012
Cathay Pacific	8,517	-1.1
Korean Air	7,813	-5.6
Singapore Airlines	6,419	-5.1

	2013	% chg vs 2012
China Eastern Airlines	4,857	3.3
China Airlines	4,854	0.5
Air China	4,554	0.1
EVA Air	4,278	-4.3
Asiana Airlines	4,185	-0.6
China Southern Airlines	4,029	4.3
All Nippon Airways	3,340	12.3
Thai International Airways	2,565	-3.3
Qantas	2,080	-5.7
Malaysia Airlines	1,991	5.7
Japan Airlines	1,837	8.1
Total Selected Airlines	**61,319**	**-0.6**

Source: Flight Global Airline Business August 2013

Cathay Pacific and Korean Air, the two largest cargo-carrying legacy airlines in the region, both saw FTKs decline from 2012 levels. While Korean Air is declining over 5% per year Cathay Pacific has improved by only recording a small decline of 1.1%. The two largest Chinese carriers, China Eastern and China Southern recorded continued growth of 3.3% and 4.3% on their 2012 figures.

Taiwan based China Airlines recorded a marginal percentage increase of 0.5% compared to the large percentage decrease of 14.9% it reported in 2012. Airlines such as Eva Air, Thai International and Qantas recorded continued decline throughout 2013 while both Japanese Airlines recorded continued growth showing the Japanese market is going from strength to strength.

3.8.5 Latin America

The Air Cargo industry in Latin America is a fraction of that of Europe, North America and Asia Pacific.

Air Cargo traffic (FTKs) for selected airlines in the region is displayed in Table 3.24. Collectively, the major carriers achieved growth of 4.4% in 2013 compared to 2012.

Table 3.24: Selected Latin American Airlines: Freight Tonne-Kilometres (FTKs) [millions] 2013 v 2012

	2013	% chg vs 2012
LAN Airlines	3,350	-9.5
TAM Linhas Aereas	1,122	41.2
Avianca	842	12.4
Total Selected Airlines	**5,314**	**4.4%**

Source: Flight Global Airline Business August 2013

LAN Airlines reported a total of 3,350M freight tonne-kilometres in 2013, a decline of 9.5% over 2012. TAM Linhas Aereas reported a total of 1,122M FTKs in 2013 which is significantly above the 795M FTKs reported in 2012, an increase of 41.2%. Avianca has continued to increase the level of freight traffic after the considerable growth in 2012 by 12.4%. This has helped the Latin American region to continue growing

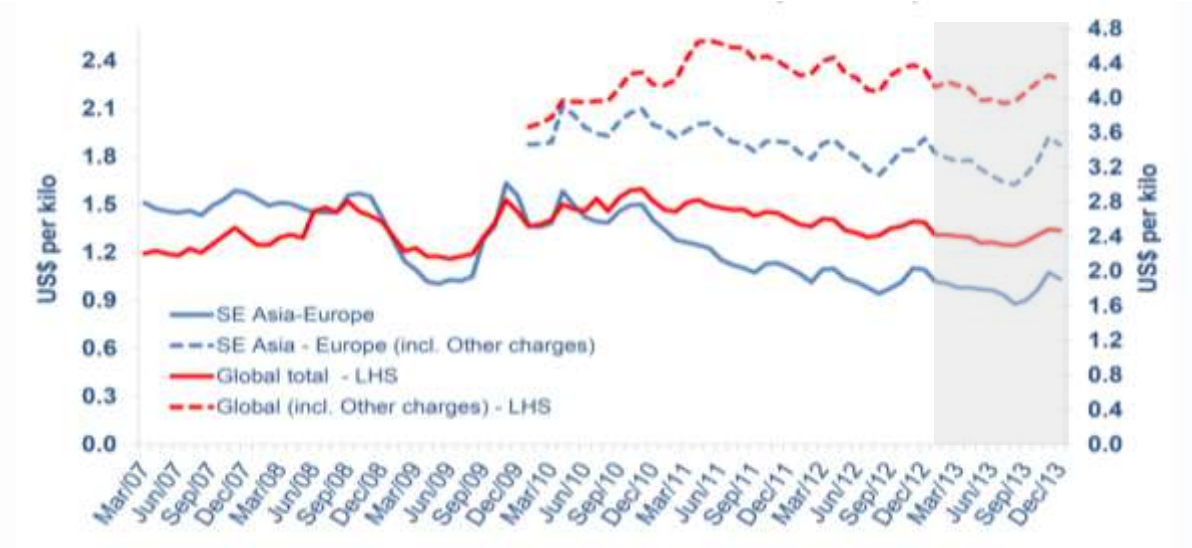
in the air freight sector. According to industry analysis[48] LAN's cargo division raised US$1.61bn in revenue in 2012 (+2.3% growth over 2011).

3.8.6 Air Cargo Yields & Revenue

Analysis of Figure 3.18 below shows a slight increase in yield towards the latter end of 2013 however this is a seasonal fluctuation and yields have generally not improved significantly in 2013. Oil prices continued to stay in the higher price bracket which results in reduced revenue while fleet expansion has also placed downward pressure on yields and load factors.

According to IATA's survey of cargo airline heads, the outlook for 2014 is more positive due to improvements in demand backdrop and the expectation that traffic will increase in 2014.

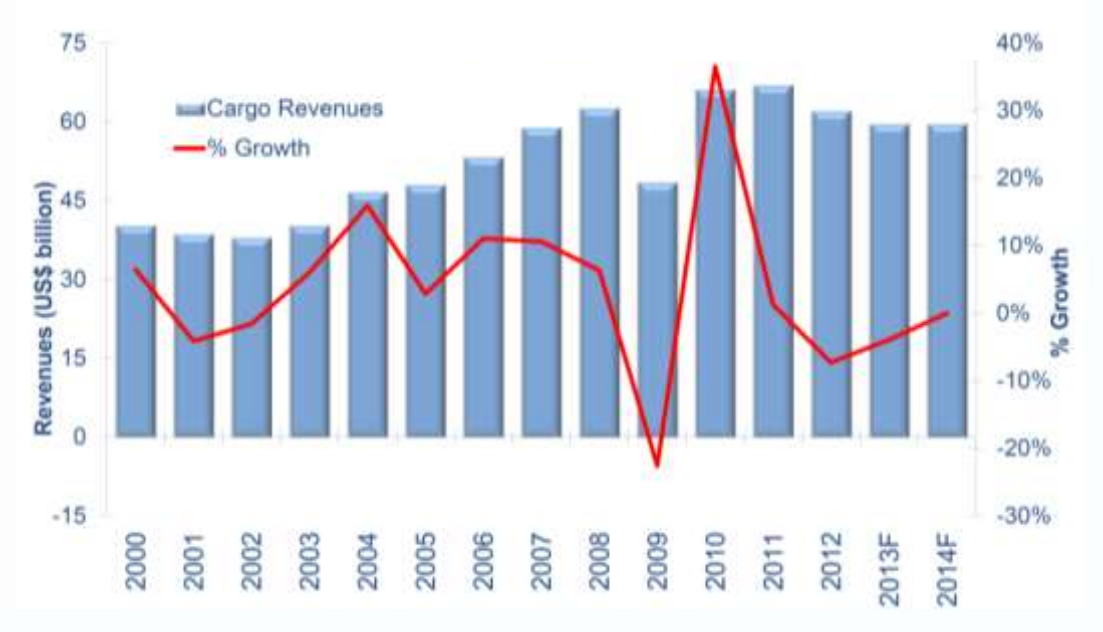
Figure 3.18: Air Freight Yields (US$ per kilogram)



Source: IATA Cargo eChartbook Q1 2014, accessed at www.iata.org ; acknowledgement to CASS
Note: LHS = Long Haul Services; Other charges include handling charges, dangerous goods fees, special charges, fuel surcharges, security etc.

[48] Airline Business; World Airline Rankings – Financial; August 2013

Figure 3.19: Global Airline Industry Cargo Revenues



Source: IATA Cargo eChartbook Q1 2014, accessed at www.iata.org ; acknowledgement to ICAO

The Southeast Asia to Europe market remained on a downward trend for the majority of 2013, albeit with a slight upturn in September and October. In common with recent years, weaker demand for Asian manufacturing hit cargo volumes substantially.

Following the decline in revenue since the peak in 2010, 2013 was looking positive based on IATA analysis shown in Figure 3.19.

4. Airports

4.1 Introduction

This chapter provides an analysis of the airport industry performance and development in 2013. Firstly, airport traffic (passenger and movements) is examined by world region and at major European airports. This is followed by a financial performance analysis for selected major airport groups, and the main airport developments that occurred in 2013 are reported and examined, in a European and global context.

4.2 Airport Traffic & Developments in 2013

4.2.1 Traffic

Table 4.1 provides a summary of the principal airport operating data split by world region. European airports saw an increase in passenger numbers by 7.1% in 2013, while a 9.7% increase was seen at the world's airports. Latin America (+12.8%) and Asia Pacific markets (+20.5%) have shown the most growth in 2013 while Africa and North American markets only saw a slight increase of 1.1% and 0.5% respectively.[49] Growth in Europe and North American markets continued to be slower than in the rest of the world, evidenced by the decreasing share of world traffic held by the two regions, while Asia Pacific now taking the lead as the main world region in terms of passenger traffic.

Air freight figures show how Africa has been the worst performing region compared to the previous year (-5.6%) in terms of flown tonnes. Middle East continued to have the highest growth (+5.1%). Commercial air movements in Europe decreased by 1.5%, with the Middle East continuing achieving the highest growth (6.6%)

Table 4.1: Global Air Traffic Throughput at Worldwide Airports by Region

Region	EUR	AFR	ASP	LAC	MEA	NAM	World
Passengers 2012 (millions)	1,615.9	163.5	1,709.7	444.4	253.8	1,562.3	**5,749.6**
2012 share of World %	28%	3%	30%	8%	4%	27%	**100%**
Passengers 2013 (millions)	1,730.0	165.3	2,060.0	501.1	278.5	1,570.3	**6,305.5**
2013 share of World %	27%	3%	33%	8%	4%	25%	**100%**
% change 2013 v 2012	**7.1**	**1.1**	**20.5**	**12.8**	**9.7**	**0.5**	**9.7**
Freight tonnes 2012 (millions)	16.7	1.8	31.1	4.8	5.9	27.3	**87.7**
2012 share of World %	19%	2%	35%	6%	7%	31%	**100%**
Freight tonnes 2013 (millions)	16.7	1.7	33.6	4.8	6.2	26.8	**90.2**
2013 share of World %	19%	2%	37%	5%	7%	30%	**100%**
% change 2013 v 2012	**0.0**	**-5.6**	**8.0**	**0.0**	**5.1**	**-1.8**	**2.9**

[49] Based on data provided by reporting airports to Airport Council International (ACI).

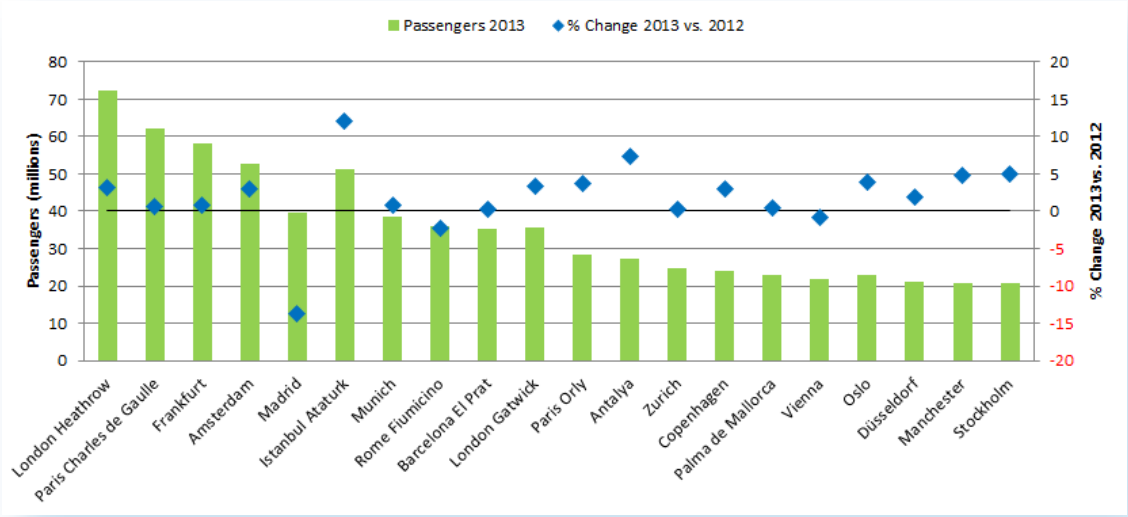
Region	EUR	AFR	ASP	LAC	MEA	NAM	World
Commercial ATMs 2012 (millions)	16.0	2.1	10.3	5.4	1.9	19.8	**55.5**
2012 share of World %	29%	4%	19%	10%	3%	36%	**100%**
Commercial ATMs 2013 (millions)	16.1	2.1	11.7	5.1	1.9	19.8	**56.9**
2013 share of World %	28%	4%	21%	9%	3%	35%	**100%**
% change 2013 v 2012	**0.6**	**0.0**	**13.6**	**-5.6**	**0.0**	**0.0**	**2.5**
Pax per ATM 2012	101	77	166	83	132	79	**104**
Pax per ATM 2013	107	79	176	98	147	79	**111**

(EUR = Europe, AFR = Africa, ASP = Asia Pacific, LAC = Latin America-Caribbean, MEA = Middle East, NAM = North America)
Source: ACI World Airport Statistics 2013

Figure 4.1 shows the passenger throughput and annual growth rates at the 20 largest EU airports (ranked by 2013 passenger numbers). Passenger traffic has grown for all airports with the exception of Madrid (for the third year in a row) and Rome Fiumicino (for the second year in a row) and Vienna. London Heathrow continued to be top of the table with 72.3 million passengers (+3%). Paris Charles de Gaulle and Frankfurt maintained their second and third positions.

Impressive growth was experienced by Istanbul Atatürk (+12%), for the second year running. This is contrasting with the year-on-year growth rates of the other 19 airports which range between -14% and 7%.

Figure 4.1: Passenger Throughput at Major European Airports 2013



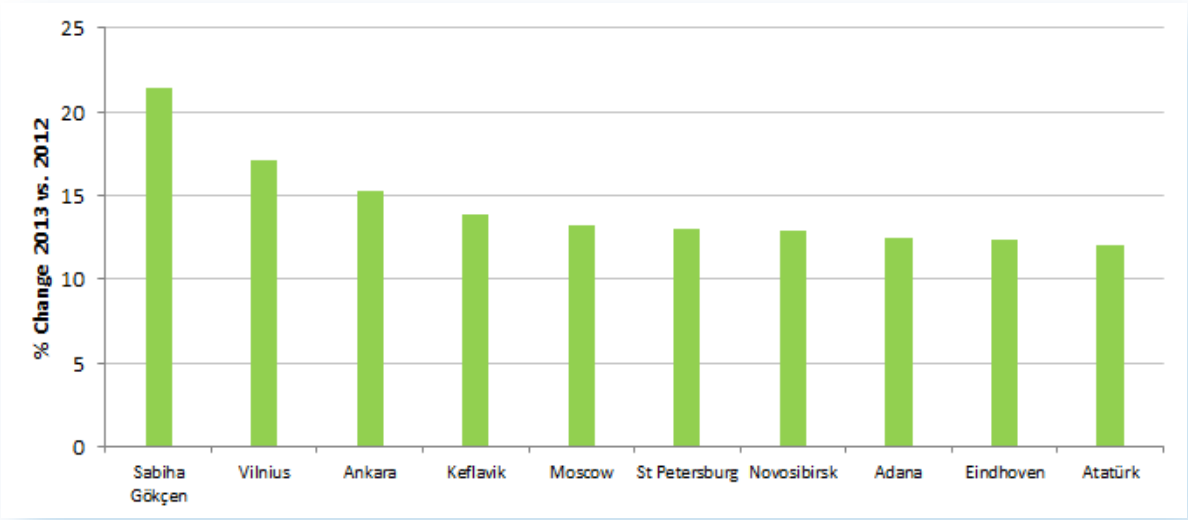
Source: ACI World Airport Statistics 2013

The top-10 and bottom-10 growing airports are illustrated respectively in Figure 4.2 and Figure 4.3. Only those European airports with over 2.5 million passengers during 2013 are considered in this analysis. Four of the top-10 positions are occupied by Turkish airports (Istanbul Atatürk, Adana, Istanbul Sabiha Gökçen and Ankara), due to the expansion of Pegasus and Turkish Airlines. Vilnius has shown a high percentage change which was helped by the addition of four new airlines to the airport. Keflavik Airport's high growth is

due to both new routes and its position in terms of connections between USA and Europe. Three of the top-10 positions are dominated by Russian airports which are mainly due to new routes added at each airport and also an increase in disposable income in Russia. Eindhoven has continued to benefit from the growth of low cost carriers Transavia and Wizz Air.

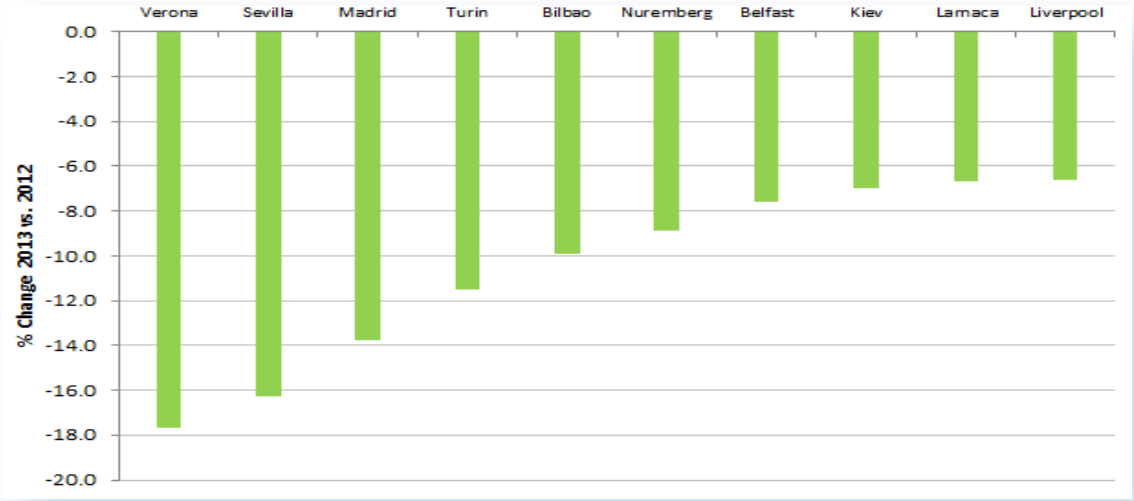
In 2013, Verona Airport had the highest percentage passenger decrease compared to 2012, mainly due to Ryanair cutting routes and difficulties with Meridiana Airlines. Mediterranean countries such as Spain, Italy and Greece are still experiencing difficulties following the economic crisis. Flughafen International Nuremberg is also experiencing a reduced growth following the removal of Air Berlin's Hub from the airport. Two of UK's airports, Belfast International Airport an Liverpool John Lennon Airport have seen decline with Belfast suffering a decline following route cuts and continuous competition from Belfast City Airport and Liverpool suffering from route cuts by EasyJet. Borispol State International Airport in Kiev has also seen a decline which may also be attributed to competition from Kyiv International Airport (Zhuliany) and also the continued unrest in the country. Larnaca airport has also not recovered from the difficulties attributed to Cyprus Airways.

Figure 4.2: European Airports (>2.5m pax) Exhibiting the Highest Growth in 2013



Source: ACI Airport Statistics 2013

Figure 4.3: European Airports (>2.5m pax) Exhibiting the Largest Declines in 2013



Source: ACI World Airport Statistics 2013

4.2.2 Global Airports

Table 4.2 reports the leading top-20 global airports in terms of passenger volumes for 2013. Only three of the top 20 airports (Atlanta, Denver and Bangkok) have experienced a minor decline in passenger numbers throughout 2013. While the top-6 positions are unchanged, much movement was observed in the 10th to 20th positions. Out of the seven airports that have lost positions during 2013, there is a split between European, Asia-Pacific and North-American markets. While three of the five European airports occupying this table have slipped down the rankings, Istanbul Atatürk is a continuing to move up in the top-20 with 14% growth. Double-digit growth was also experienced in Kuala Lumpur which is new to the top-20 while Dubai sustained its expansion (+15%).

Table 4.2: World Top-20 Airports by passenger throughput 2013

Rank	City, Country	Airport Code	Total Passengers	% Change	2012 Rank	
1	Atlanta, USA	ATL	94,431,224	-1%	1	=
2	Beijing Capital, China	PEK	83,712,355	2%	2	=
3	London Heathrow, UK	LHR	72,368,061	3%	3	=
4	Tokyo Haneda, Japan	HND	68,906,509	3%	5	=
5	Chicago O'Hare, USA	ORD	66,777,161	0%	4	=
6	Los Angeles, USA	LAX	66,667,619	5%	6	=
7	Dubai, UAE	DXB	66,431,533	15%	10	▲
8	Paris Charles de Gaulle, France	CDG	62,052,917	1%	7	▼
9	Dallas Fort Worth, USA	DFW	60,470,507	3%	8	▼
10	Jakarta, Indonesia	CGK	60,137,347	4%	9	▼

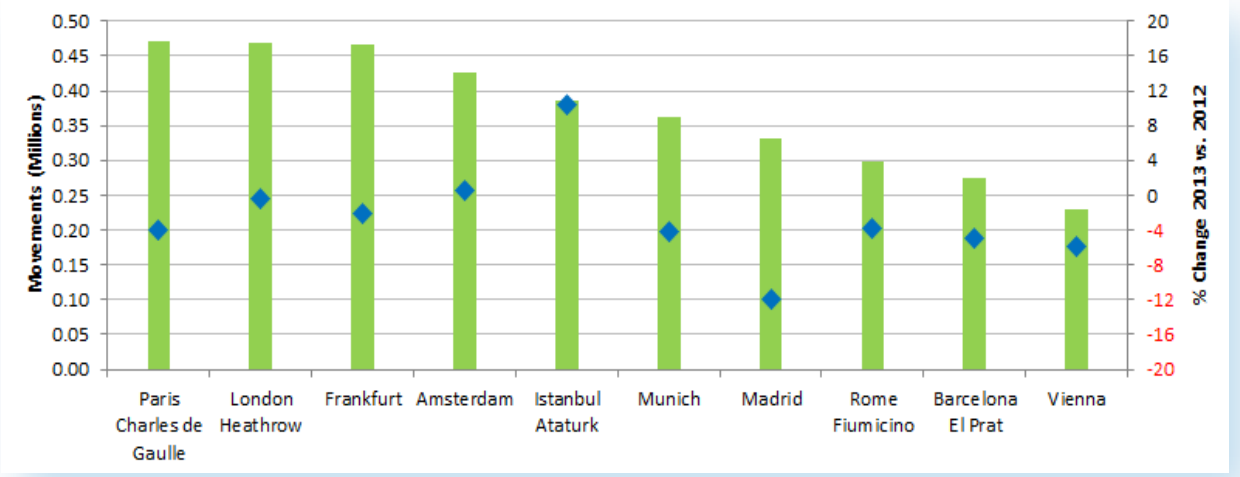
Rank	City, Country	Airport Code	Total Passengers	% Change	2012 Rank
11	Hong Kong, China	HKG	59,588,081	6%	12 ▲
12	Frankfurt, Germany	FRA	58,036,948	1%	11 ▼
13	Singapore Changi, Singapore	SIN	53,726,087	5%	15 ▲
14	Amsterdam, Netherlands	AMS	52,569,200	3%	16 ▲
15	Denver, USA	DEN	52,556,359	-1%	13 ▼
16	Guangzhou, China	CAN	52,450,262	9%	18 ▲
17	Bangkok Suvarnabhumi, Thailand	BKK	51,363,451	-3%	14 ▼
18	Istanbul Atatürk, Turkey	IST	51,304,654	14%	20 ▲
19	New York JFK, USA	JFK	50,423,765	2%	17 ▼
20	Kuala Lumpur, Malaysia	KUL	47,498,127	19%	27 ▲

Source: ACI World Airport Statistics 2013

4.2.3 Air Transport Movements

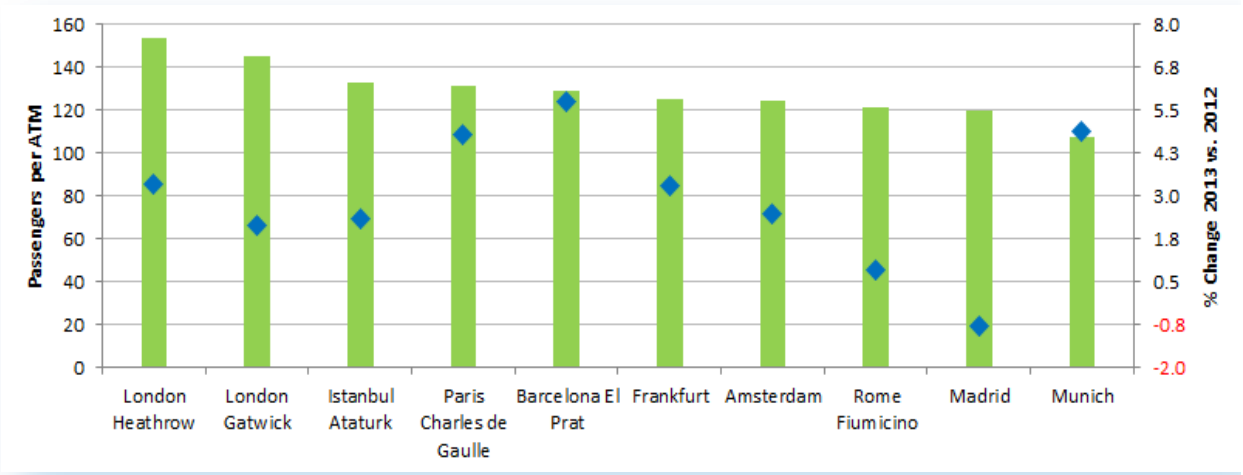
Figure 4.4 and Figure 4.5 show air transport movements and average passengers per ATM at major European Airports. The trend in growing passenger numbers is not reflected in terms of increase in air transport movements. Aside from Istanbul Atatürk (+10%) and Amsterdam (+1%), all of the ten largest airports in Europe experienced a decrease in air transport movements. Average passengers per ATM figures show an increase for all airports with the exception of Madrid (-1%) compared to last year, indicating continued capacity discipline by airlines in increasing average load factors.

Figure 4.4: Total Movements at Major European Airports 2013 vs. 2012



Source: ACI World Airport Statistics 2013

Figure 4.5: Average Passengers per ATM at Major European Airports 2013 vs. 2012



Source: ACI World Airport Statistics 2013

4.2.4 Airport Financial Results

This section details financial results (based on the most recent data available) for the airport industry as a whole and individual results from a number of the major airports and airport groups operating in Europe and the rest of the world.

The data in Table 4.3 below is sourced from the ACI Economics Report 2013 (Preview Edition), published in 2014, based on a response from about 680 airports that collectively handled 3.99 billion passengers in 2012, or some 70% of global traffic in that year. The data relates to the financial year 2012/2013.

Table 4.3: World Airport Industry Revenues, Financial Year 2012/13 (USD billion)

	Aeronautical	Non-aeronautical	Total Revenue
Africa	1.900	0.900	2.800
Asia Pacific	15.800	15.800	31.600
Europe	26.100	18.200	44.300
Latina America-Caribbean	4.200	2.300	6.500
Middle East	3.500	3.000	6.500
North America	14.300	11.000	25.300
World	**65.800**	**51.200**	**117.000**

Source: 2013 Airport Economics Report

Based on the ACI survey, worldwide total airport income in 2012/2013 reached USD 117 billion, an increase of 8.1% on 2011/2012. While non-aeronautical income (with retail concessions, rental property and real estate income, and car parking representing almost 70% of all non-aeronautical income) is an important source of revenues for airports, the majority of revenues are obtained through aeronautical

income (composed of charges levied on aircraft and passengers). The proportion of income from this source represents 56% of total income whereas non-aeronautical income and non-operating income makes up 44% of the total income. In 2012/2013 airports saw their total costs, operating expenses and capital costs total USD 98 billion. The largest component of operating expenses is personnel cost which accounts for almost 36% of operating expenses.

Europe

For airport groups which have produced full year financial results, the vast majority of major European airport groups have posted profits or improved figures compared with 2012. The following table outlines the ranking of each European airport group along with their revenues achieved in 2013.

Table 4.4: European Airport Groups, Financial Year 2012/13 (USD million)

2013	2012	Group	Country	Revenue ($ million)	% Change
1	1	Heathrow Airport Holdings	UK	4,150	10.3
2	3	Aena Aeropuertos	Spain	3,824	14.1
3	2	Aeroports de Paris	France	3,662	7.5
4	4	Fraport	Germany	3,405	8.1
8	8	Schiphol Group	Netherlands	1,837	5.3
10	15	TAV Airports	Turkey	1,602	13.0
12	13	Flughafen Munchen	Germany	1,575	2.9
23	40	Manchester Airports Group	UK	1,070	64.6
25	24	Flughafen Zurich	Switzerland	1,055	3.7
30	37	Aeroporti di Roma	Italy	930	31.7
35	31	Flughafen Wien	Austria	827	5.5
44	43	Copenhagen Airports	Denmark	650	6.7

Source: Airline Business from Flight Global – Airport Group Financials 2014

AENA

AENA is the State airport group owner and operator of 46 Spanish airports. Following the successful implementation of their new airport management model, AENA have managed to generate a positive cashflow by efficient management of costs, streamlining investments and increasing commercial and aviation revenue. AENA have also increased their international presence by increasing their ownership in London Luton Airport and have ownership entitlements in 12 Mexican Airports and 2 Colombian Airports. According to AENA [50], it registered the following financial performance in 2013:

- Revenue: EUR2.9 billion, +10.7%
- Net Profit: EUR 597 million, +1,039%

Amsterdam Schiphol Group

The Schiphol Group is the owner and operator of Amsterdam Schiphol Airport, Rotterdam, Eindhoven and Lelystad regional airports. It also has international interests in Paris Charles de Gaulle (with which it has a strategic alliance known as “HubLink” and an 8% cross-shareholding), New York JFK (operator of Terminal

[50] AENA Annual Report 2013

4) and at airports in Australia, Hong Kong, Aruba and Sweden. Passenger traffic volumes at Amsterdam Schiphol airport, Rotterdam and Eindhoven combined grew by 4.1% to 57.6 million. Results published for 2013 show[51]:

- Net revenue increased by 2.2% to €1.38 billion
- An Operating Result of €321 million (increase of 8.2% compared to 2012)

Heathrow Limited (formerly BAA Limited)

Heathrow Limited since rebranding its airports (Heathrow, Glasgow, Aberdeen, Southampton) in 2012, now only report on Heathrow Airport. The sale of Stansted Airport to the Manchester Airport Group in February 2013 provided £292 million pounds of pre-tax profit.

Reported below are Heathrow Limited financial results for Heathrow Airport for the year ended 31 December 2013[52]:

- The company managed to gain a pre-tax profit of £426 million (including £292 for sale of Stansted)
- Revenue increased by 11.3% to £2.47 billion
- Increased revenue per passenger of £34.21 in 2013 versus £31.74 in 2012

Aéroports de Paris (AdP)

Aéroports de Paris is the owner of all the major airports in the Paris Region. Its high profile assets include the major Paris airports of Charles de Gaulle, Orly and the general/business aviation facility at Le Bourget. The company has participations in other international airports (i.e. Jordan, Mexico) and Turkish TAV Havalimanlari Holding AS, which runs a portfolio of airports among which is Istanbul Atatürk. Total passenger traffic at the Parisian airports in 2013 increased by 1.7% to 90.3 million. In 2013 AdP achieved these results[53]:

- Total Revenue increased by 4.3% to €2.75 billion
- Net income decreased to €305 million (-10.0%) for the full year 2013
- Revenue per passenger increased to € 30.50 (from €29.73)

Fraport

Fraport AG has significant worldwide airport business interests including Frankfurt am Main, Antalya in Turkey and Lima in Peru. In 2013, passenger numbers for the Group rose by 5.2% to 197.9 million, with a 0.9% increase at Frankfurt to 58 million. Financial results for 2013 show that[54]:

- Revenue increased by 4.9% to €2.56bn
- The group profits decreased by 6.3% to €235.7 million

[51] Schiphol Group 2013 Annual Results

[52] Heathrow Limited - Results for the year ended 31 December 2013

[53] All Data Aéroports de Paris 2013 Annual Financial Statement

[54] Fraport Annual Report 2013

Aeroporti di Roma

Aeroporti di Roma is responsible for the two main Rome airports – Fiumicino and Ciampino. In 2013 passenger traffic at the two airports decreased by 1.3% to 41 million[55]:

- Revenue increased by 22.2% to €664.4 million in 2013
- Net income decreased two thirds to €89.9 million from €263.1 in 2012

Flughafen Wien

Flughafen Wien is responsible for Vienna International Airport in Austria. In 2013 passenger numbers were down 0.7% on 2012 to 22 million. Financial Results for 2013 show[56]:

- A 2.4% increase in revenue to €622 million
- A net profit of €73.3m, 1.9% higher than 2012

Manchester Airports Group (MAG)

As at the end of 2013, Manchester Airports Group owns and operates Manchester, London Stansted, East Midlands and Bournemouth airports. Total passenger numbers at MAG Airports grew to 24.5 million passengers (1.9% growth compared to 2012). Financial results for FY2012/13 show:[57]

- 5.3% increase in revenue to £393.1m
- A 12.4% increase in operating profit to £73.6m

Zurich Airport

Flughafen Zurich AG operates Zurich Airport, where passenger numbers increased by 0.3% to 24.86 million passengers in 2013. Its financial performance for 2013 was[58]:

- Revenues rose by 2.8% to CHF 975m
- Profit increased by 44.7% to CHF 137m, following the outcome of IAS 19 in 2012

Zurich Airport signed a new affiliation contract with “BVK Employee Pension Fund of the Canton of Zurich” (BVK) which adopted IAS 19 “Employee Benefits” (as amended in 2011). The previous benefit plan was defined as a contribution plan but is now a defined benefit plan. The cost to Zurich Airport for this change totalled EUR 93.8M.

Flughafen München

Flughafen München is the owner and operator of Munich International Airport which in 2013 handled 38.7 million passengers (+0.7% compared to 2012). The financial data for consolidated profit showed an increase by 3.4% to €98.6 million.

[55] Aeroporti di Roma 2013 Annual Report

[56] Flughafen Wien 2013 Annual Report

[57] Manchester Airports Group Annual report and accounts 2013

[58] Zurich Airport Financial Report 2013

Københavns Lufthavne

Københavns Lufthavne owns Copenhagen Kastrup Airport and Roskilde Airport in Denmark. Passenger numbers at Copenhagen Kastrup reached a historic record of 24.1 million in 2012[59] (+3.1% compared to 2012), and its financial performance is summarised below:

- Total revenue rose by 3.7% to DKK 3.64 million in the twelve months ended 31 December
- Net profit reduced by 39% to 976 million DKK

Rest of the World

A selection of financial and operational results from airport groups around the world is reported below, to provide a means of comparison with the European airport groups.

Greater Toronto Airports Authority

The Greater Toronto Airport Authority is responsible for Pearson International Airport in Toronto, Canada. In 2013 the airport served 36.1 million passengers and its financial performance highlights are as follows[60]:

- Total revenue decreased by 1.7% to CAD 1.12 billion
- The GTAA recorded a profit of CAD 7m due to reduction in aeronautical rates and higher operating expenses

Airports of Thailand

The Airports of Thailand group includes Bangkok Suvarnabhumi, Bangkok Don Muang, Chiang Mai, Phuket, Hat Yai and Chiang Rai. The six airports accounted for 86.1 million passengers in 2013, an increase of 20.43% on 2012[61]. Financial results for 2013 show:

- Revenue increased by 21.1% to THB 36.8 billion
- Full year profits rose from THB 6.5 billion to THB 16.3 billion

GMR

GMR is a major Indian infrastructure group that manages and operates New Delhi International Airport, Hyderabad Airport and Sabiha Gökçen Airport in Istanbul. The group also has a significant interest in the expansion work at Malé Airport in the Maldives. Results for the fiscal year ending 31st March 2013 show a total income for the group's aviation segment of 6 billion Indian Rupees (Rs), compared with 4.4 billion in the previous year. Delhi airport passengers decreased by 4.4% reaching 34.3 million, Hyderabad decreased by 2.5% achieving 8.3 million passengers and Istanbul Sabiha Gökçen airport increased by 8.7% to 14.9 million in the calendar year 2012.

The decline in passenger numbers is attributed to domestic travel. However, better operating performance at Hyderabad and reduced tariffs at Delhi have resulted in a higher total income.

[59] 'Kobenhavns Lufthavne Annual report 2013

[60] Greater Toronto Airports Group 2013 Annual report

[61] Airports of Thailand 2013 Annual report

TAV Airports Holding

TAV Airports holding has significant airport interests in Turkey and surrounding countries, including the operation of Istanbul Atatürk, Ankara Esenboga, Monastir & Enfidha in Tunisia, Medinah Airport in Saudi Arabia, Zagreb Airport in Croatia, Riga Airport in Latvia and both Skopje and Ohrid Airports in Macedonia and Tblisi and Batumi in Georgia. TAV airports' domestic passenger traffic increased by 18% to 36.2m and international traffic increased by 16% to 47.4m. The financial results for calendar year 2013 show[62]:

- Revenue for the full year 2013 totalled €2.2 billion (+17% vs. 2012)
- Profit for the full year was €336 million, reaching a record high (€297 million in 2012)

Dubai Airports

Dubai Airports (Dubai International and Al Maktoum International at Dubai World Central) reported a 12% growth in aeronautical revenues in 2013 primarily a result of the strong growth in Dubai International's two based airlines Emirates & flydubai. Commercial revenues (non-aeronautical) contributed to 52% of total airport revenues growing by 23% in 2013, significantly above passenger growth. This was achieved by upgrading concessions and new leasing arrangements; total revenues grew by 17% (passenger growth at Dubai International was 15%).

4.2.5 Major Airport Developments

Below are reported the major airport developments in Europe, North America, Latin America, Middle East, Asia Pacific and Africa. The information has been obtained from various sources including CAPA, ACI 2013 World Airport Development News, ACI 2013 Economics Report and Airport World News.

European Union

Bulgaria

Varna Airport Terminal 2 – All passengers at Varna Airport will now be serviced from the new Terminal 2, officially opened to the public on 27 August 2013. The old Terminal 1 was closed for flights after 41 years of operation. At 20 000 m², the new passenger service area in Terminal 2 is approximately three times bigger than that of the old terminal. Construction of the EUR 38.3m Terminal 2 was completed in 20 months and is the largest investment made at Varna Airport in recent decades.

Croatia

New Operators and New Terminal Announced at Zagreb Airport – The concession to operate Zagreb Airport for the next 30 years reached financial close in December 2013 and has been signed with MZLZ (shareholders include ADPM, Bougues, IFC and TAV) for a total of €331m which includes the financing, design and construction of a new terminal to accommodate a capacity of 5mppa. The project should be delivered by 2016.

[62] TAV Airports Investor Relations Financial Statements 2013

Finland

Helsinki Airport Improvement Works – Finavia will be carrying out phased improvement works on Helsinki Airport up to 2020 to increase airport capacity from 15mppa to 20mppa. This will include firstly infrastructure upgrades in the terminal and eventually moving onto terminal expansion depending on future demand.

France

Vinci Stakes in Aéroports de Paris – Following its successful bid late in 2012 for concession of a 95% stake in Portuguese airport operator ANA, VINCI has further purchased a 4.7% stake in Aéroports de Paris (ADP) for EUR 364m. This comes after the French Minister announced plans to sell 10 million shares in ADP worth EUR 700m.

Germany

Berlin's new Brandenburg Airport – To accelerate the opening a SPRINT action plan has been presented to the Supervisory Board of Flughafen Berlin Brandenburg GmbH. The action plan sets out the processes that are related to the opening including remaining construction work approvals, trial runs and the opening itself.

HOCHTIEF Sell Airport Business – A Canadian Pension Fund Manager has acquired HOCHTIEF's airport business for EUR 1.1bn. The airport business is made up of a group of airports including Athens, Budapest, Düsseldorf, Hamburg, Sydney and Tirana which combined handle 95mppa.

Ireland

Shannon Airport – Following the separation of Shannon Airport from the Dublin Airport Authority on 1 January 2013, the airport started operations on a solid footing by way of a debt-free balance sheet and a business plan with an immediate focus on growing passenger numbers and route development. The airport will also work towards the development of the International Aviation Services Centre at Shannon.

Italy

Re-opening of Runway 2 at Rome-Fiumicino – The reopening on 13 June 2013 marked the closing of the first construction site of the 'Development Plan of Fiumicino Sud', into which ADR invested about EUR 24 million. The works provided for the complete renovation of all systems and surfaces on more than 300 000 m². About 500 000 m³ of materials were moved and they lay over 200 km of cables. Hundreds of visual navaids, used for landings in minimum visibility conditions, were replaced.

Milan Malpensa Makeover – Announced in 2013, Milan Malpensa will be getting a complete makeover ahead of the 2015 EXPO. The makeover will ensure that all areas of the airport match the new design of Terminal 1. Terminal 1 when completed will contain 90 boarding gates, 270 check in desks and 41 loading bridges. The airport will also be able to accommodate two A380s at the same time.

United Kingdom

Heathrow Hub and Investment Plan – Heathrow has launched its EUR 3.5bn investment plan for 2014-2019 which includes the completion of Terminal 2 works, upgrading of baggage systems and development of new taxiways and stands to accommodate modern aircraft. Heathrow has also submitted three proposals to the Airports Commission on increasing capacity to become the hub airport in the UK.

Gatwick Hub and Transformation – London-Gatwick has marked a key milestone in its EUR 1.4 billion transformation as demolition started on Pier 1 which will be replaced by new pier facilities. In partnership with Vinci Construction UK, the new design will deliver easy access from the departure lounge and spacious departure gates where passengers can enjoy panoramic views of the airfield and a completely new baggage system for the South Terminal. Gatwick has also issued a submission containing three options to the Davies Commission which will allow the airport to be a hub by adding an additional runway.

London City Airport – Expected to apply for planning permission to construct new stands and parallel taxiway works. This is to facilitate growth of aircraft movements from 70,000 to 120,000 a year, and passenger growth from 3.2 million to a notional 10 million passengers per annum. Key to the airport expansion is the introduction of the 130-seat Bombardier C series aircraft. Presently, the C series will not fit into the current stands, hence the need for an upgrading programme.

London Stansted Acquisition and Re-vamp – The Manchester Airport Group (MAG) has completed its acquisition of Stansted Airport for EUR 1.75bn. As part of the transaction, Australia-based Industry Funds Management (IFM) has taken a 35.5% equity interest in the enlarged group. MAG is also launching a EUR 93.5m revamp of the terminal which includes relocating the security area, improving passenger lanes, improving facilities and more seating areas.

London Luton Acquisition – Abertis has agreed a price with Aena for London Luton Airport of EUR 502m. The ownership in Luton will now change from 90% Abertis/10% Aena to 51% Aena/49% Axa Private Equity. Aena's interests in Luton were financed by existing credit lines and by the sale of minority stakes it held in other international airports.

Edinburgh Airport – Edinburgh is planning a EUR 31.2m investment extending the current terminal building which is to be completed by the end of 2015. This investment will be part of a larger investment programme totalling EUR 186.9m. It will include a larger security area, airline business centre and new retail areas.

Aberdeen Airport – Aberdeen will undergo a EUR 15.5m redevelopment which will begin in 2014. The redevelopment will include larger lounges, more retail opportunity, new domestic and international reclaim belts and a new and improved security area.

Lydd Airport, Kent – Plans for the EUR 31.2m runway extension at Lydd Airport is well underway with documentation being prepared on environmental controls for the site. Following completion of this stage the project should be ready for tender in early 2014.

Bristol Airport – A EUR 8.1m walkway at Bristol Airport is being constructed to relieve congestion in the terminal. The works are part of a bigger project including terminal expansion, public transport interchange and multi storey car park. The walkway will have new pre-boarding zones and up to six departure gates.

Guernsey Airport – The EUR 93m redevelopment of the runway and apron areas at Guernsey was completed by November 2013. This involved a runway extension, runway rehabilitation, taxiway extension and total rebuild of the apron.

Other UK Airports – Glasgow Prestwick Airport and Manston Airport in Kent have been sold by Infratil Limited to TS Prestwick Holdco Limited (becoming Scottish Government owned) and Ann Gloag (co-founder of the Stagecoach Group) respectively for GBP 1. This move by Infratil Limited was made to offload some of the airports from its portfolio.

Belfast International – The owners of Belfast International, Abertis, have sold a bulk of their airports in order to reduce a EUR 10.5bn debt. The company sold Belfast International, Stockholm Skavsta airports, Orlando Sanford airport terminal concessions and TBI's airport management business in the US for a total of EUR 212m.

Rest of Europe

Russia

Anapa Airport New Terminal – A new terminal is to be constructed at Russia's Anapa Airport worth EUR 11.6m to handle the domestic travel to the airport. The current terminal will then solely be used for international passengers. The project is planned to be complete by 2018.

Turkey

Third Istanbul Airport – A tender for the third Istanbul airport with an estimated annual passenger capacity of up to 150 million was won by the all-Turkish Limak/Cengiz/Kolin/Ma-Pa/Kalyon consortium for the third Istanbul airport after the five members had proposed EUR 22.15 billion plus VAT for the Build-Operate-Transfer (BOT) project (construction and 25-year operation). Construction work on the airport is to begin next year, and services should start at the end of 2018.

Middle East

Bahrain

Bahrain Airport boosts capacity – Bahrain Airport is planning a three step improvement programme over the coming years due to increasing passenger numbers. The first step will be to invest EUR 13.5m in replacing infrastructure such as boarding bridges, flooring and security systems. They are then planning to invest EUR 747.7m in expanding the terminal building. The last step will focus on the possibility of a new airport for Bahrain to increase capacity by 2030.

Israel

Ramon International Airport Construction – Construction has begun on the new EUR 336.5m Ramon International Airport in Israel. The airport will be replacing the current airport in Eilat due to its constrained city location. The project should be completed by 2017 with an anticipated 1.5mppa passing through its doors.

Jordan

Amman Airport – The new terminal opened on 3 March 2013 with inaugural flights to Athens, Doha, and Sharm el-Sheikh. The new terminal will have the capacity to handle 9mppa when it is fully operational, nearly tripling the airport's previous capacity of 3.5 million passengers. Improvements of the existing terminal facilities include increasing the size of the check-in areas, the refurbishment of retail space and increasing the mix of duty-free shopping and food & beverage outlets. An upgrade of the baggage-handling system and security checking will also be implemented.

Qatar

New Doha International – Up to twelve airlines started operating from Doha's new Hamad International Airport when the facility opened on 1 April 2013. The current Doha International Airport will remain open to passenger services until Qatar Airways moves its entire operations to the new facility.

Saudi Arabia

Riyadh Airport Expansion – Terminal 5 at Riyadh's "King Khalid International Airport" is due to be constructed by TAV Construction following their win of the design and construction tender. The project, worth $400m, will include the construction of a terminal, multi-storey car park, fire brigade building, operation centre, power station, apron, airside infrastructure and elevated roads that adjoin to the rest of the terminals.

North America

United States

San Francisco International Airport Upgrade – The airport has announced a EUR 3.1 billion, ten-year Capital Improvement Plan aimed at upgrading its infrastructure. The funding will be used to renovate the concourse and security checkpoint in Terminal 3 and upgrade the Boarding Area B in Terminal 1.

New York JFK international Airport Terminal 4 – As part of a USD 1.4 billion redevelopment programme JFK International Airport have opened Terminal 4 which includes improved and renovated check-in areas, a centralized security checkpoint, new dining and retail offerings, an in-line baggage system to streamline and improve the baggage handling system, improved customs and border protection, baggage claim and re-check facilities.

Orlando International Airport Expansion – Orlando International Airport's capacity is set to double to 45 million passengers per year with a EUR 821.5m investment. Major elements of the EUR 821.5m project include baggage improvements, other terminal projects, airsides 1 & 3 Automated People Movers (APM), airfield projects, ground transportation, south airport APM complex multi-modal upgrade and 4 international improvements with four new gates. Work on these projects is expected to begin in fiscal year 2014 and will conclude by fiscal year 2017.

Salt Lake City International Airport Terminal Redevelopment – The Terminal Redevelopment Programme (TRP) will aim to improve infrastructure and accommodate future growth and will be worth EUR 1.3bn. The TRP includes construction of separate areas for arrivals and departures, general upgrades to the terminal building, develop the airport's concourses, expand terminal facilities to

accommodate 75 aircraft gates, build a new two-level rental car building and a five-level parking garage with 3,600 spaces and a new central utility plant.

Houston 'William P Hobby Airport' – Construction work has begun on a new international terminal worth EUR 116.5m. The project is fully funded by Southwest Airlines and once completed the five-gate facility will accommodate regional international flights for Southwest, with services to the Caribbean, Mexico, and the northern cities of South America. In addition to the five-gate international terminal, the project includes an expansion of the existing security checkpoint and upgrades to the Southwest check-in area.

Latin America

Brazil

Concessions and Privatisation at Major Brazilian Airports – Salvador International Airport (SSA) in the north-eastern state of Bahia and Porto Alegre International Airport (POA) in the southern state of Rio Grande do Sul are among the next possible candidates for privatization. Both Salvador and Porto Alegre airports handle 8.8 million and 8.2 million annual passengers respectively, which will take them above the 5mppa threshold for privatisation. Also, following the Federal Government's approval of the international airport concessions of Rio de Janeiro's Galeão Airport and Belo Horizonte-Confins which total EUR 4.1bn, the tenders were launched in August 2013 with invitation to only companies with experience in airports with annual traffic above 35mppa.

Government's Investments on Regional Airports – Infraero, the state-owned airport operator has been continuing modernisation works in many of the countries airports. Work includes refurbishment, upgrading and expansion projects. The Government has indicated that the intention is for Brazil to achieve a network of 800 regional airports, each within 60 km of any city with at least 100,000 residents.

Columbia

Bogotà-El Dorado Domestic Terminal – Construction of the future domestic terminal at Bogotà-El Dorado, the country's main airport, is scheduled to be finished in July 2014. The new facility will initially serve as El Dorado's new international terminal before the addition of two new concourses allows it to handle domestic traffic. The terminal is expected to be able to accommodate 30 million passengers annually by 2014.

Cuba

Havana Airport – The main international terminal at Havana Airport is getting a EUR 7.6m overhaul to improve operations. The Terminal 3 upgrade will include eight boarding bridges and the expansion of a parking area outside the terminal, new walkways, additional check-in counters, lighting and air-conditioning improvements, and systems to conserve water and electricity. Repairs on the terminal began in July 2013 and are expected to last six months.

Ecuador

New Quito International Airport Phase 2 – Following the opening of the new Quito airport, Quiport, the concessionaire of the new Quito Airport, has started drawing up plans for the EUR 12.3m Phase 2 of the Quito Airport Expansion Project. The second phase will expand the passenger terminal to 5260 m² and will

include two new boarding bridges. The estimated budget for this portion of the expansion works is EUR 11.2m. In addition, works will include runway centreline lights to aid pilots in low visibility conditions. This portion has a budget of EUR 1.1m.

Mexico

Mexico City International Airport – The airport is currently operating in excess of regulations that determine the number of landings and take-offs permitted. Capacity at the airport is saturated therefore construction of a new airport is becoming more critical. The Government is expected to make an announcement in the short term specifying the location and schedule for the project.

Panama

Government Investment – The Government is investing EUR 654.8m in developing the country's airport infrastructure. The bulk of the money will go into improving Panama City's Tocumen International Airport, which handles around 8 million passengers annually. A EUR 502.9m South Pier is under construction and will increase the handling capacity to 18 million annual passengers.

Peru

Chinchero International Airport - The private investment promotion agency ProInversión has relaunched a bidding process for the concession of Cuzco's new EUR 313.5m Chinchero International Airport, to be awarded in December 2013. The 40-year, co-financed concession entails the design, construction, financing, operation, and maintenance of the new facility which will replace Cuzco's existing 'Alejandro Velasco Astete Airport', which can only handle a limited number of daytime flights. Chinchero Airport is expected to handle 2.6 million passengers annually by 2021.

Aeropuertos del Perú (ADP) - The country's airport concessionaire, has launched a consultancy tender to update the master development plans for twelve airports. ADP is in charge of the design, construction, improvement and maintenance of the twelve secondary airports in the north of Peru: Anta-Huaraz, Cajamarca, Chachapoyas, Chiclayo, Iquitos, Piura, Tumbes, Pucallpa, Talara, Tarapoto, Trujillo, and Pisco. The consultancy period is set for 31 months.

Puerto Rico

Muñoz Marín International Airport – The U.S. territory's Governor approved turning over the operation of San Juan's 'Muñoz Marín International Airport' to a private company as part of an estimated EUR 1.9bn deal which has been protested. The deal needed to be signed because the island's Port Authority had to pay a EUR 447.9m debt immediately and a EUR 253.8m debt in June 2013.

St Vincent and the Grenadines

Argyle International Airport – Construction is continuing at Argyle International Airport with operations due to start towards the end of 2014. Earthworks on the runway were 85% complete and the passenger terminal building was 87% done by August 2013. The airport will have a single terminal for 1.5 million annual passengers and a 9,000-ft runway capable of handling aircraft up to the size of the Boeing 747. Built over three-storeys, the 145,000-ft² terminal will have dedicated areas for domestic and international passengers.

Asia Pacific

Australia

Perth Airport's Terminal 2 – The new EUR 83.6m Domestic Terminal opened on 2 March 2013. The Terminal 2 features 16 check-in counters and space for new self-service and bag drop technology for faster and easier check-in, a spacious departures lounge with high-quality retail, food & beverage choices, 14 aircraft gates accessed via covered walkways and three large baggage reclaim belts to minimize waiting times.

Melbourne-Tullamarine Airport – A draft preliminary master plan has been released for future development at the airport. The master plan covers development which will cater for 64mppa by 2033. The master plan includes a new runway, long term road solution, environmental strategy, ground transport and airport safeguarding along with a EUR 7bn investment in airport infrastructure.

Cambodia

Increasing Airport Capacity – There are plans to increase the capacity of the terminals at Phnom Penh and Siem Reap to around 4 to 5 million passengers a year. As Phnom Penh Airport will soon reach its capacity limit, Cambodia Airports decided to launch new terminals in Phnom Penh and Siem Reap for an investment of about EUR 74.7m. Construction of the first phase will start in December 2013 after the projects have been validated by the Government.

China

Shenzhen Bao'an International Airport New Terminal - The new terminal is set to begin operations in late November 2013 and will replace the airport's existing three terminals. The airport temporarily closed on October 2013 and will remain closed for the next month while operations shift to Terminal 3, which is due to open on November 2013. Terminal 3 will replace the airport's existing Terminals A and B as well as its International Terminal. The new 450,000-m² terminal features 192 check-in counters, a VIP lounge, a commercial dining area, and a baggage hall. The new facility will have capacity for 45 million passengers per year, including 36 million domestic and nine million international passengers.

Preparatory work for Beijing's new international airport has started at Daxing, which will have a notional capacity of 130 million passengers a year. Daxing's annual capacity will be 80 million passengers and is designed to have eight runways and access to a broad ground transport network, including high-speed trains and inter-airport trains. Further to this, China is constructing the world's highest civil airport in Daocheng, Garze Prefecture in Sichuan province. Construction of Daocheng-Yading Airport at an altitude of 4410m began in June 2012.

China – Hong Kong

Development at Hong Kong International Airport - Airport Authority Hong Kong (AAHK) has welcomed the Study Brief for the Environmental Impact Assessment (EIA) of expanding Hong Kong International Airport (HKIA) into a three-runway system. The next step is to embark upon the EIA process, which is expected to take about two years to complete. There is also additional works at HKIA on the midfield concourse which was awarded to Aitkens following their previous works at HKIA. The works include the

construction of a new midfield concourse building, new aprons and new taxiways to facilitate traffic on the airfield.

India

Development at Indian Airports – Targets have been set for developing key infrastructure projects, including 51 new low-cost airports, two new international airports at Imphal and Bhuvaneshwar and eight Greenfield airports under PPP schemes. Further to this, a building contract has been awarded to Larson and Tubro Limited for the fourth international airport in Kerala. The company will construct most of the airside infrastructure including runways, taxiways, aprons, substations and navigation facilities.

Privatisation of Airports – The Central Government approved the privatization of the Chennai and Kolkata airports, which are currently operated by the Airports Authority of India (AAI) and have been modernized with substantial AAI resources. The new terminals at the two airports might be leased out to private concessionaires who would be asked to pay a compensation for the investments made. Kolkata's 'Netaji Subhash Chandra Bose International Airport' in West Bengal and Chennai International Airport in Tamil Nadu, would be the first checked off the list in the Government's plans to privatize 15 airports across the country

Indonesia

Relieving Congestion at Indonesian Airports – Within the next five years it is planned that Semarang Airport in Central Java, Banjarmasin Airport in South Kalimantan and Surabaya Airport in East Java will be expanded with one terminal each to increase capacity.

Expansion of Jakarta Soekarno-Hatta Airport – Expansion has been delayed at Jakarta Soekarno-Hatta therefore a feasibility study is now underway for new runways off the coast of Jakarta to help alleviate congestion.

Malaysia

Kuala Lumpur International Airport 2 – Will no longer be a low-cost terminal, but Malaysia's first hybrid airport with upgraded Business Class services, alongside total international passenger segregation. The purpose-built mega terminal 2 km away from the existing Kuala Lumpur International Airport has the capacity to cater to 45 million passengers, with 68 boarding gates, fully automated baggage system, aerobridges, a new control tower, and a 4000-m runway.

Myanmar

Hanthawaddy International Airport – Construction will begin as soon as a final agreement is reached with the the Inchon Airport Consortium. The project, located 77 km north of Yangon Airport, is expected to cost up to EUR 822.2m and take five-and-a-half years to complete. It will span 3920 hectares and be able to handle more than 10 million passengers a year initially. Airport construction will be in three phases: The first phase includes a 12 000-ft runway, a terminal for up to 12 million passengers annually and other airport facilities. The second phase would upgrade the airport to handle 15 million passengers. The runway and terminal facilities will be expanded if the number of passengers rises to 25 million in the final stage. Capacity could later be expanded to 30 million.

New Zealand

Auckland Airport Expansion – Auckland Airport plans to construct a new sweeping crescent-shaped domestic and international terminal to increase capacity at the airport. The project with a price tag of EUR 1.5bn is part of the company's strategy of building the airport's position as a key hub in the Asia-Pacific region. It allows for new or extended aircraft piers and will accommodate up to 40mppa.

Philippines

Two Airport System - A Government plan has been introduced to implement a two-airport system for Luzon, designating Manila's 'Ninoy Aquino International Airport' (NAIA) as the southern aviation hub and Clark International Airport (CIA) as the northern aviation centre for the region. The Government has approved construction of an interim terminal with a 2.5 million passenger capacity at Clark International Airport, and the Department of Transportation & Communications (DoTC) is studying the possibility of building a new budget terminal with a capacity of 10 million passengers for Clark International in support of the Department of Tourism's mandated target of 10 million tourist arrivals by 2016.

Operation and Expansion of Mactan-Cebu - Bids for the operation and expansion of Mactan-Cebu Airport were being received with the consortium of GMR and Megawide Construction being the fore-runners. GMR plan to develop a new terminal capable of handling 25mppa if their bid is accepted.

Singapore

New Terminal 4 to Open in 2017 at Changi Airport – Singapore Changi Airport closed its Budget Terminal in 2012. Work began on the new Terminal 4, scheduled to open in 2017. The new terminal will have a capacity of 16mppa bringing Changi's total capacity to 82mppa. The new Terminal will also have the flexibility to meet operational needs of both regional full-service and low-cost carriers.

Project Jewel – This project will be constructed on the surface of the Terminal 1 car park at Changi Airport. It will mainly comprise of leisure and retail facilities but will allow for the extra space required to increase capacity at the airport. The project is expected to be completed by 2018.

South Korea

Incheon Airport – Construction has begun on the new EUR 1.9bn Terminal 2 at Incheon Airport which will include 72 gates, VIP lounges and an observation deck. The project will also include the construction of a second control tower, train station and an airside Intra Airport Transit (IAT).

Taiwan

Taiwan Taoyuan International Airport - The new Terminal 3 worth EUR 1.2bn which is scheduled for completion in 2018 includes the development of the new terminal building, concourse and aprons, service roads, ground service and operations facilities, taxiway system and new passenger access roads. The new terminal will be critical as the airport expands from its current 25 million passengers and 1.77 million tonnes of cargo each year to an estimated 59.8 million travellers and 4.48 million tonnes of cargo annually by 2030.

Thailand

Expansion at Thailand's Three Main Airports – Bangkok's Suvarnabhumi Airport is in the process of getting works underway on a new passenger terminal, more parking bays and a new runway capable of handling 60mppa at the cost of EUR 1.5bn. Bangkok's Don Mueang International Airport, which reopened to relieve congestion at the main airport, is renovating the second terminal to allow a boost in capacity to 20mppa. Phuket International is also preparing to construct a new passenger terminal and more parking bays to boost capacity.

Vietnam

Relieving Congestion at Ho Chi Minh Tan Son Nhat International – It has been planned that a new airport is to be constructed 35 km outside Ho Chi Minh City in Long Thanh District, Dong Nai Province. The report estimates that the proposed 5000-hectare airport with four runways could serve 100 million passengers and 5 million tonnes of cargo by 2030.The total cost to construct the new Long Thanh airport has been estimated at EUR 5.8bn.

Africa

Ethiopia

Four New Airports – The Ethiopian Airports Enterprise will increase the number of airports from 17 to 21 in line with the Growth and Transformation Plan for the region. The country's eighteenth airport is under construction in Kombolcha with an investment of over EUR 2.3m. The nineteenth, General Hayelom Araya Airport, will be built near Shire, Mekele district in the Tigray region. The site of the other two airports, which might be in the Somalia region, is under study.

Ghana

New Airport in Greater Accra Region – The Government has plans to construct a new international airport in the Dangbe-East District of the Greater Accra Region. The Government signed a Memorandum of Understanding with China Airports Construction Corporation (CACC) in 2012 to undertake a feasibility study for the proposed new airport which is expected to take 18 months.

Airport Upgrade at Tamale - The Government of Ghana have approved a EUR 74.8m contract to upgrade Tamale Airport into an international airport. This will include a runway extension, taxiway rehabilitation and apron expansion. The project will take 18 months to complete after design approval.

Kenya

Expansion at Jomo Kenyatta International Airport – Early in 2013 the Government completed the financing arrangements for the new Terminal 4, second runway and other related facilities at Nairobi's 'Jomo Kenyatta International Airport'. The estimated cost is approximately EUR 486m. On 7 August 2013, a massive early-morning fire destroyed the International Arrivals Hall at the airport forcing the closure of East Africa's largest airport and the rerouting of all inbound flights. Construction was already under way for Terminal 4 when the fire broke out. The airport is now working in temporary facilities until Terminal 4 is finished.

Libya

Tripoli New Airport - Construction of Tripoli's new airport has started and is expected to welcome over 20 million travellers a year once complete. The project which is being supervised by ADPI, the French research consultancy group, will be implemented by six companies including Vinci of France, Odebrecht of Brazil, and TAV of Turkey.

Mauritius

New Terminal Opening - The new terminal at Sir Seewoosagur Ramgoolam International Airport has celebrated its first commercial test flight. The terminal is capable of handling 4 mppa. Since the soft opening of the terminal in March 2013, additional trial flights and training processes have been ongoing. Construction of the new terminal began in March 2010 and start-up operations will begin in summer 2013.

Nigeria

Airport Remodelling - The remodelling of Murtala Mohammed International Airport in Lagos is aimed at making it the preferred West African hub. Expansion of the terminal, installation of new conveyor belts for quick baggage delivery, upgrading of the air-conditioning system and overall rehabilitation of the terminal would entirely improve and attract more airlines into the country.

Rwanda

New International Airport at Bugesera - The Government has finally awarded the contract for the new international airport at Bugesera to the winning bidder, the China State Construction Engineering Corporation. The cost of the new state-of-the-art airport is expected to top EUR 486m.

Sudan

Delayed Opening of New Khartoum International Airport - The airport project was originally scheduled to be completed by 2010, but persistent delays in funding have meant that it will most likely only be operational in 2014 at the earliest.

Zambia

The Parliamentary Committee on Transport & Communications has approved the proposed site for building the new Simon Mwansa Kapwepwe International Airport in Ndola. Once the design is complete, the international airport will be constructed at a cost of EUR 389m. The facility will have the capacity to accommodate 2mppa with more room for expansion.

Zanzibar

New Terminal Delays - After construction of the new terminal was halted in 2012, ADPI where chosen to adapt the layout plans and complete all necessary works so that it was deemed compliant by ICAO. Once completed, the terminal will have capacity for 3mppa.

4.3 Airport Charges

Although the framework of airport charges is largely uniform and their structures are similar, the levels of charges can vary significantly among similar airports. The tables and charts below detail the major airport charges at a selection of airports in Europe, Africa, Asia Pacific and the Americas for a narrow-bodied Boeing 737-800 and a wide-bodied Boeing 747-400 aircraft.

Table 4.5: Airport Charges (in GBP) at Selected Airports Boeing 737-800 Aircraft

Airport	Aircraft Charges 2012	Aircraft Charges 2013	% Chg Airport Charges	Pax Charges 2012	Pax Charges 2013	% Chg Pax Charges	Total Charges 2012	Total Charges 2013	% Chg Total Charges
EUROPE									
Frankfurt	740	1048	42	2,758	2,390	-13	3,498	3,437	-2
London LHR	1,459	2,747	88	3,757	4,381	17	5,216	7,127	37
Paris CDG	586	863	47	3,587	2,258	-37	4,173	3,121	-25
Madrid	860	1,190	38	2,214	2,473	12	3,074	3,663	19
Amsterdam	983	573	-42	2,591	2,628	1	3,574	3,201	-10
Istanbul IST	662	776	17	1,085	1,043	-4	1,747	1,819	4
Moscow DME	887	1,336	51	1571	1,168	-26	2458	2,505	2
AFRICA									
Johannesburg	936	725	-23	1,896	1,961	3	2,833	2,686	-5
Casablanca	580	865	49	1,540	2,023	31	2,120	2,888	36
Nairobi	442	238	-46	3,485	2,782	-20	3,927	3,020	-23
ASIA PACIFIC									
Dubai	272	279	3	1,517	1,515	0	1,790	1,794	0
Hong Kong	533	534	0	497	502	1	1,030	1,036	1
Beijing	377	550	46	926	791	-15	1,302	1,341	3
Tokyo NRT	1,639	1,522	-7	1,804	1,812	0	3,442	3,333	-3
Sydney	355	507	43	3,214	3,441	7	3,569	3,949	11
AMERICAS									
Chicago ORD	780	869	11	2,541	2,282	-10	3,321	3,151	-5
New York JFK	677	1,033	53	313	348	11	991	1,381	39
Rio de Janeiro GIG	571	382	-33	2,071	2,161	4	2,643	2,543	-4

Source: rdc Aviation/airportcharges.com (Parameters: Currency – GBP; Aircraft – Turkish Airlines B737-800; international route; turnaround time – 60 mins; MTOW – 79.0 tonnes; MLW – 65.3 tonnes; capacity – 155 passengers; load factor – 70%; passengers – 109)

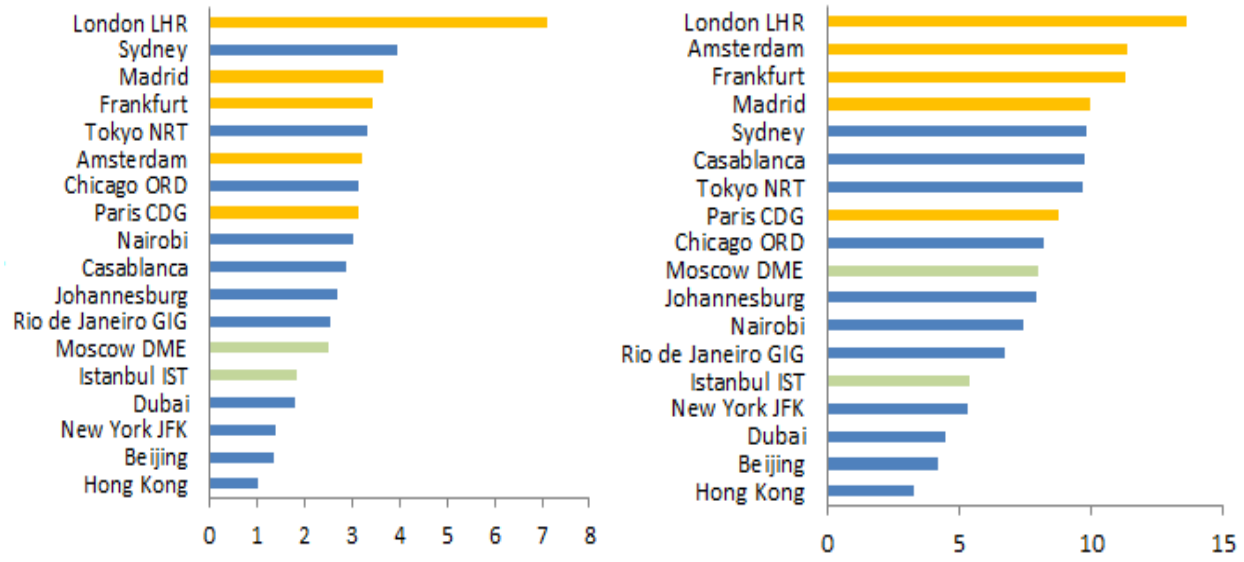
Table 4.6: Airport Charges (in GBP) at Selected Airports for Boeing 747-400 Aircraft

Airport	Aircraft Charges 2012	Aircraft Charges 2013	% Chg Airport Charges	Pax Charges 2012	Pax Charges 2013	% Chg Pax Charges	Total Charges 2012	Total Charges 2013	% Chg Total Charges
EUROPE									
Frankfurt	4,064	5,998	48	6,283	5,306	-16	10,347	11,304	9
London LHR	2,078	3,911	88	8,558	9,726	14	10,636	13,637	28
Paris CDG	2,959	3,772	27	8,170	5,013	-39	11,129	8,786	-21
Madrid	3,844	4,458	16	5,043	5,490	9	8,887	9,948	12
Amsterdam	5,668	5,523	-3	5,902	5,835	-1	11,570	11,358	-2
Istanbul IST	2,584	3,061	18	2,472	2,316	-6	5,056	5,377	6
Moscow DME	4,402	5,431	23	3,579	2,594	-28	7,981	8,024	1
AFRICA									
Johannesburg	3,973	3,557	-10	4,320	4,354	1	8,293	7,911	-5
Casablanca	4,615	5,234	13	3,508	4,491	28	8,123	9,726	20
Nairobi	1,194	1,244	4	7,938	6,176	-22	9,132	7,420	-19
ASIA PACIFIC									
Dubai	1,080	1,099	2	3,456	3,363	-3	4,536	4,463	-2
Hong Kong	2,174	2,188	1	1,132	1,115	-1	3,306	3,303	0
Beijing	2,074	2,397	16	2,108	1,755	-17	4,182	4,152	-1
Tokyo NRT	5,701	5,645	-1	4,108	4,022	-2	9,809	9,667	-1
Sydney	1,762	2,199	25	7,321	7,640	4	9,083	9,839	8
AMERICAS									
Chicago ORD	3,872	3,132	-19	5,788	5,066	-12	9,660	8,198	-15
New York JFK	3,361	4,547	35	713	772	8	4,075	5,319	31
Rio de Janeiro GIG	2,113	1,897	-10	4,718	4,797	2	6,831	6,694	-2

Source: rdc Aviation/airportcharges.com (Parameters: Currency – GBP; Aircraft – British Airways B747-400; international route; turnaround time – 60 mins; MTOW – 369.9 tonnes; MLW – 285.8 tonnes; capacity – 345 passengers; load factor – 70%; passengers – 242)

The tables above demonstrate the key changes in airport charges at a number of major world airports in 2013 compared with the charges for 2012. Assuming that a change of +/- 5% can invariably be accounted for by fluctuations in exchange rates and inflationary rises, the general trend being shown is that most listed airports have kept total charging at 2012 levels. Exceptions are London Heathrow, Madrid, Frankfurt, Casablanca, Sydney and New York, which have all shown double digit increases in their charges for 2013. Heathrow Airport and New York Airport showed substantial increase for B737-800 aircraft in the charge analysis.

Figure 4.6: 2013 Total Airport Charges (in thousands GBP) at Selected Airports for Boeing 737-800 (left) Boeing 747-400 (right) Aircraft



Source: rdc Aviation/airportcharges.com (orange: European Union airports, Green: other European airports, Blue: World airports)

As shown in Figure 4.6, there are wide variations in airport charging regimes. For instance, the most expensive airport for a Boeing 737-800 to land (London Heathrow) is about 6 times more expensive than the cheapest (Hong Kong). A similar story is in evidence for the Boeing 747-400 with London Heathrow almost 8 times more expensive than Hong Kong. As a benchmark, the major European Union's airports tend to show charges at the higher end of the world spectrum, while airports such as Istanbul Atatürk and Moscow Domodedovo are positioned in the mid-lower price range which has not changed since 2012. This analysis has not changed significantly overall since 2012 with only a few airports moving slightly up and down the scale.

4.4 Customer Satisfaction

In recent years airports around the world have been focusing on how customers view their airports and priding themselves on being an airport people want to travel from. In order to track how the airport is performing on a customer service basis they invite customers to take part in surveys either online or at the airport while they wait at the gate for departure. SKYTRAX and ACI have been promoting their surveys to airports around the world and awarding the best airports for their achievements.

Customer satisfaction is determined through a variety of conditions that the customer may experience before, during and after their time at the airport. Different product or service factors include but are not limited to:

1. **Getting to the Airport:** Ease of access, transportation (taxi, train), costs
2. **Availability of Luggage Trollies:** Airside and landside

3. **Thermal Comfort and Cleanliness:** General ambiance, seating, lavatory facilities
4. **Immigration:** Queuing times, staff manner
5. **Security:** Queuing, staff manner
6. **Check in:** Queuing times, seat availability
7. **Manoeuvrability:** Signage, location of boarding gates
8. **Information:** Clarity of PA announcements, flight information displays
9. **Facilities:** Retail, food and beverage establishments, lounges entertainment areas
10. **Connectivity:** Internet points, charging points, Wi-Fi
11. **Cash Facilities:** ATM, bureau de change
12. **Other Facilities:** Lost luggage, smoking areas
13. **Operations:** Flight delays, cancellations, gate changes

The following outlines the best airports under different categories determined by the SKYTRAX survey for 2013. A total of 12.85 million customers took part in the nominations.

Table 4.7: World Airport Awards

Category	Winning Airport	2nd Place	3rd Place
World's Best Airport	Changi Airport Singapore	Incheon Int'l Airport Seoul, South Korea	Munich Airport Germany
World's Best Domestic Airport	Int'l Airport Haneda Tokyo, Japan	Hongqiao Int'l Airport Shanghai, China	King Shaka Int'l Airport Durban, South Africa
World's Best Airport Terminal	Heathrow Airport - T5 London, United Kingdom	Changi Airport Singapore	Haneda Airport Int'l Terminal Tokyo. Japan
World's Best Premium Service Airports	Doha Int'l Airport Doha, Qatar	Abu Dhabi Int'l Airport Abu Dhabi, UAE	Suvamabhumi Airport Bangkok, Thailand
World's Most Improved Airport	Bao'an Int'l Airport Shenzhen, China	Xianyang Xi'an, China	Shuangliu Int'l Airport Chengdu, China
World's Best Airport VIP Terminal	Phoenix Int'l Airport Sanya, China	Munich Airport Germany	Meilan Int'l Airport Haikou, China
World's Best Low-Cost Airport	Stansted London, United Kingdom	Schönefeld Berlin, Germany	Luton Airport London, United Kingdom
World's Best Airport Serving 50m+ Passengers	Changi Airport Singapore	Hong Kong Int'l Airport Hong Kong	Schiphol Airport Amsterdam, The Netherlands
World's Best Airport Serving 40-50m Passengers	Incheon Int'l Airport Seoul, South Korea	Kuala Lumpur Int'l Airport Kuala Lumpur, Malaysia	San Francisco Int'l Airport USA
World's Best Airport Serving 30-40m Passengers	Munich Airport Germany	Hongqiao Int'l Airport Shanghai, China	Narita Int'l Airport Tokyo, Japan
World's Best Airport Serving 20-30m Passengers	Zurich Airport Switzerland	Copenhagen Airport Denmark	Brisbane Airport Australia
World's Best Airport Serving 10-20m Passengers	Vancouver Int'l Airport Canada	Auckland Int'l Airport New Zealand	Central Japan Int'l Airport Nagoya, Japan
World's Best Airport Serving 5-10m Passengers	Cincinnati/Northern Kentucky Airport USA	Cologne Bonn Airport Germany	Cape Town Int'l Airport South Africa

Category	Winning Airport	2nd Place	3rd Place
World's Best Airport Serving Under 5m Passengers	London City Airport United Kingdom	King Shaka Int'l Airport Durban, South Africa	Stanfield Int'l Airport Halifax, Canada
World's Best Airport Shopping	Heathrow Airport London, United Kingdom	Changi Airport Singapore	Hong Kong Int'l Airport Hong Kong
World's Best Airport Security Processing	Copenhagen Airport Denmark	Haneda Airport Int'l Tokyo. Japan	Incheon Int'l Airport Seoul, South Korea
World's Best Airport Immigration	Incheon Int'l Airport Seoul, South Korea	Changi Airport Singapore	Taiwan taoyuan Int'l Airport Taipei, Taiwan
World's Best Airport for Transit Passengers	Incheon Int'l Airport Seoul, South Korea	Changi Airport Singapore	Narita Int'l Airport Tokyo, Japan
World's Cleanest Airport	Haneda Airport Int'l Tokyo. Japan	Incheon Int'l Airport Seoul, South Korea	Changi Airport Singapore
World's Best Airports for Leisure Amenities	Changi Airport Singapore	Munich Airport Germany	Schiphol Airport Amsterdam, The Netherlands
World's Best Airport for Dining	Hong Kong Int'l Airport Hong Kong	Munich Airport Germany	Haneda Airport Int'l Tokyo. Japan
World's Best Airport for Baggage Delivery	Hong Kong Int'l Airport Hong Kong	Incheon Int'l Airport Seoul, South Korea	Changi Airport Singapore
World's Best Airport Hotels	Regal Airport Hong Kong	Langham Place Beijing, China	Oryx Rotana Doha, Qatar

Source: WorldAirportAwards.com

The following table outlines the best airports under different categories determined by the ACI Airport Service Quality survey for 2013.

Table 4.8: Regional Airport Awards

Category	Winning Airport	2nd Place	3rd Place
Best Airport in Africa	Cape Town Int'l Airport South Africa	Durban Int'l Airport South Africa	Sir Seewoosagur Ramgoolam Int'l Airport Mauritius
Best Airport in Asia-Pacific	Incheon Int'l Airport Seoul, South Korea	Changi Airport Singapore	Beijing Capital Int'l Airport China
Best Airport in Europe	Sheremetyevo Int'l Airport Moscow	Zurich Airport Switzerland	Francisco Sá Carneiro Airport Porto, Portugal
Best Airport in Latin America-Caribbean	José Joaquín de Olmedo Int'l Airport Guayaquil, Ecuador	Cancun Airport Mexico	Sangster Int'l Airport Montego Bay, Jamaica
Best Airport in North America	Indianapolis USA	Ottawa Macdonald-Cartier Int'l Airport Ontario, Canada	Tampa Int'l Airport Florida, USA
Best Airport in Middle East	Abu Dhabi Int'l Airport Abu Dhabi, UAE	Dubai Int'l Airport UAE	Doha Int'l Airport Doha, Qatar
Best Airport Serving 40m+ Passengers	Changi Airport Singapore	Beijing Capital Int'l Airport China	Shanghai Pudong Int'l Airport China
Best Airport Serving 25-40m Passengers	Incheon Int'l Airport Seoul, South Korea	Indira Gandhi Int'l Airport New Delhi, India	Taoyuan Int'l Airport Taipei, Tawain
Best Airport Serving 15-25m Passengers	Gimpo Int'l Airport Seoul, South Korea	Chongqing Jiangbei Int'l Airport, China	Tampa Int'l Airport Florida, USA
Best Airport Serving 5-15m Passengers	Haikou Meilan Int'l Airport China	Rajiv Gandhi Int'l Airport Hyderabad, India	Tianjin Binhai Int'l Airport Tianjin, China
Best Airport Serving 2-5m Passengers	Changchun Longjia Int'l Airport China	José Joaquín de Olmedo Int'l Airport Guayaquil, Ecuador	Ottawa Macdonald-Cartier Int'l Airport Ontario, Canada

Category	Winning Airport
Best Small Airport in Africa	Upington Airport Northern Cape, South Africa
Best Small Airport in Asia-Pacific	Langkawi Int'l Airport Kedah, Malaysia
Best Small Airport in Europe	Alexander the Great Airport Skopje, Macedonia
Best Small Airport in Latin America and Caribbean	Mazatlan Airport Mexico
Best Small Airport in North America	Jean-Lesage Int'l Airport Quebec City, USA
Best Improvement in Africa	East London Airport South Africa
Best Improvement in Asia-Pacific	Netaji Subhas Chandra Bose Int'l Airport Kolkata, India
Best Improvement in Europe	Goteborg Landvetter Airport Gothenburg, Sweden
Best Improvement in Latin America and Caribbean	Lynden Pindling Int'l Airport Nassau, Bahamas

Category	Winning Airport	2nd Place	3rd Place
Best Improvement in North America		San Antonio Int'l Airport USA	
Best Improvement in Middle East		Queen Alia Int'l Airport Amman, Jordan	

Source: aci.com

5 Aircraft Manufacturing & MRO

5.1 Introduction

The purpose of this chapter is to provide an overview of the civil aeronautics and aircraft maintenance industries in 2013. Aerospace and civil aeronautics manufacturing activities in the EU represent the second largest global market after the United States and boasts high levels of productivity, innovation and technological development and research.

The chapter contains four main areas of focus intended to explore the activities, trends and issues in this sector of the industry:

- The manufacture of aircraft and civil aeronautics products, including key metrics on output, employment, productivity and import/export activity;
- An overview of important global aeronautic markets and their development;
- The composition of the current global aircraft fleet;
- The Maintenance, Repair and Overhaul (MRO) industry, including its key metrics and trends.

Due to the inconsistent nature of up-to-date figures reported for this industry sector, the most recently published data available in the public domain is used – in some cases this means that the reference year is 2012 for some analyses.

5.2 Aeronautics and Manufacturing Overview

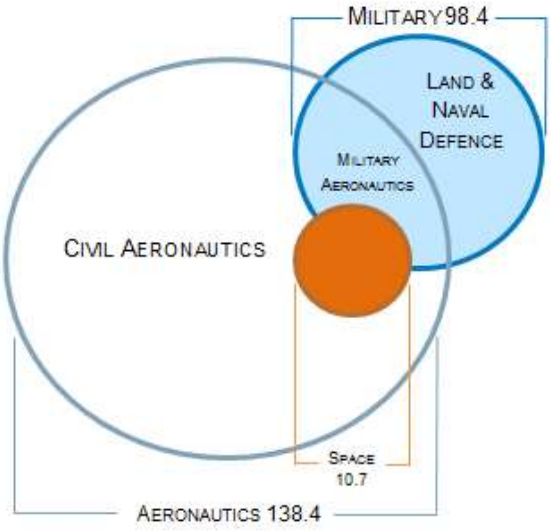
The European aeronautics industry is responsible for the design, development and production of a broad range of aviation products including civil and military aircraft, aero engines, helicopters, unmanned aerial vehicles and their associated systems, parts and equipment. It also includes activities associated with MRO. Additional activities such as the space and defence sectors are specifically excluded from the term ‘aeronautics’, but when all of these activities are considered together they are encompassed in the term ‘aerospace’.

The focus of this chapter is on civil aeronautics, which excludes activities relating to space and those sectors relating to land and naval defence equipment. Due to the high interdependencies of civil and military aviation, the two are considered alongside each other where there can be no differentiation in data sources or where the relevance is important for comparative purposes.

In some cases space activities are included in the analysis where it is standard for major comparable markets (such as the U.S.) to include these figures in their aeronautical data reporting. Where this occurs the term aerospace is used.

Figure 5.1 provides a visual description of the relationships between these sectors and the applied terminology.

Figure 5.1: Inter-relationship between Space, Aeronautics & Defence Sectors (€ billion)



Source: ASD

According to figures from the AeroSpace and Defence Industries Association of Europe (ASD), aerospace turnover in the EU totalled €197.3 billion in 2013 (an increase of +5.6% on the €186.8 billion spent in 2012). 515,262 people were directly employed in aerospace[63]. Comparisons to major international markets are shown below.

According to figures from the Deloitte "2014 Global Aerospace and Defence Sector Financial Performance Study", the overall growth rate of commercial aerospace across the world slowed in 2013 when compared to the year previous. Whereas, in 2012, revenue had increased by +16.1% (an added $38 billion), the year 2013 only saw a +9.8% increase (an added $28 billion). Moreover, only 85 new large commercial aircraft[64] were delivered in 2013 compared to the 178 new large commercial aircraft delivered in 2012. Nevertheless, global revenues still grew across 2013, totalling $312.6 billion[65].

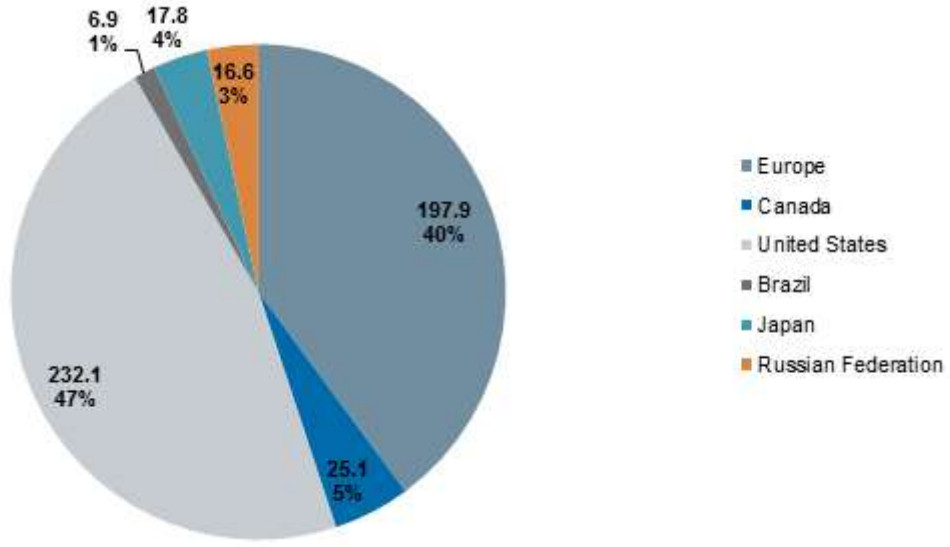
Europe alone accounted for 34.2% of the total revenues of the global Aerospace and Defence Industry in 2013.

[63] AeroSpace and Defence Industries Association of Europe, Key Facts & Figures 2013,.

[64] Large commercial aircraft include all aircraft in commercial use (i.e. those operated by airlines and charter operators). U.S. Department of Commerce, International Trade Administration (ITA), *Flight Plan 2011*, March 2011. p. 3

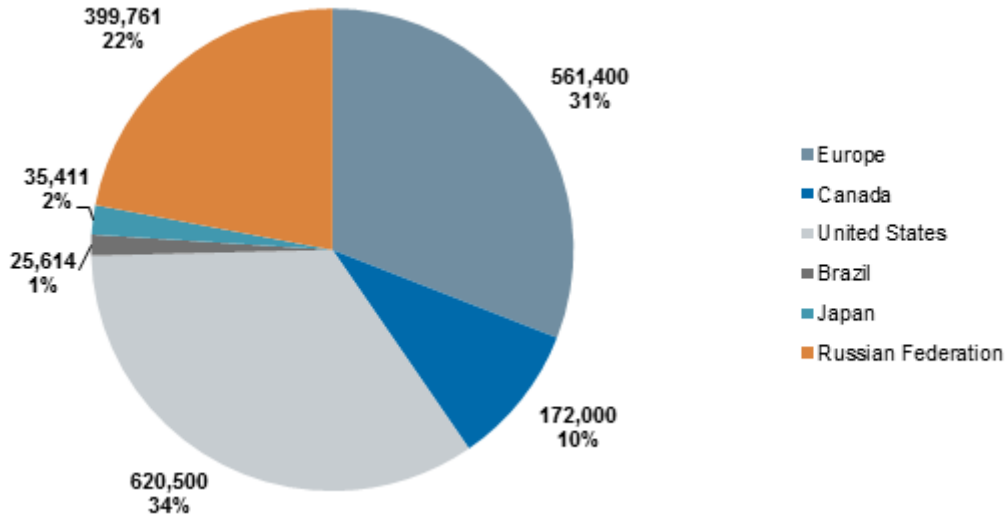
[65] Deloitte, 2014 Global Aerospace and Defence Sector Financial Performance Study

Figure 5.2: Comparative Aerospace & Defence Turnover, 2013 (€ bn)



Source: ASD

Figure 5.3: Comparative Aerospace & Defence Employment (staff units), 2013



Source: ASD

Table 5.1: Comparative Aerospace & Defence Turnover and Employment, 2013

Region	Turnover (€ bn)	Percentage of world aerospace turnover	Employment (€ bn)	Percentage of world aerospace employment
Europe	197.9	39.8	561,400	30.9
Canada	25.1	5.1	172,000	9.5
United States	232.1	46.8	620,500	34.2

Region	Turnover (€ bn)	Percentage of world aerospace turnover	Employment (€ bn)	Percentage of world aerospace employment
Brazil	6.9	1.4	25,614	1.4
Japan	17.8	3.6	35,411	2.0
Russian Federation	16.6	3.3	399,761	22.0

Source: ASD

The turnover of the European aeronautic sector in 2013 (civil and military aeronautics but excluding space activities, land and naval defence) totalled €138.5 billion, an increase of 8% over 2012. This represents a +6.1% CAGR in turnover since 2008[66]. The growth in civil and military turnover in 2012 was the largest when compared to space, land & naval but this was not the case in 2013. The space sector grew by +9.2% to €10.7 billion in 2013 whereas civil and military aeronautics only grew by +8.5%.

Across the European Aerospace and Defence industry as a whole, numbers remain very positive. Turnover increased more so in 2013, reaching €197.3 billion (up an impressive 15% from 2012). This follows a slight flat-lining in numbers from 2011 to 2012 (Figure 5.4). The number of persons employed in aerospace and defence reached 777,900 in 2013 – an increase of +3.4% over the year previous and representing a CAGR of +2.2% since 2008. Those employed in aeronautics made up 66% of the Aerospace and Defence industry.

Figure 5.4: European Aerospace and Defence Industry Turnover and Employment, 2008-2013

Source: ASD

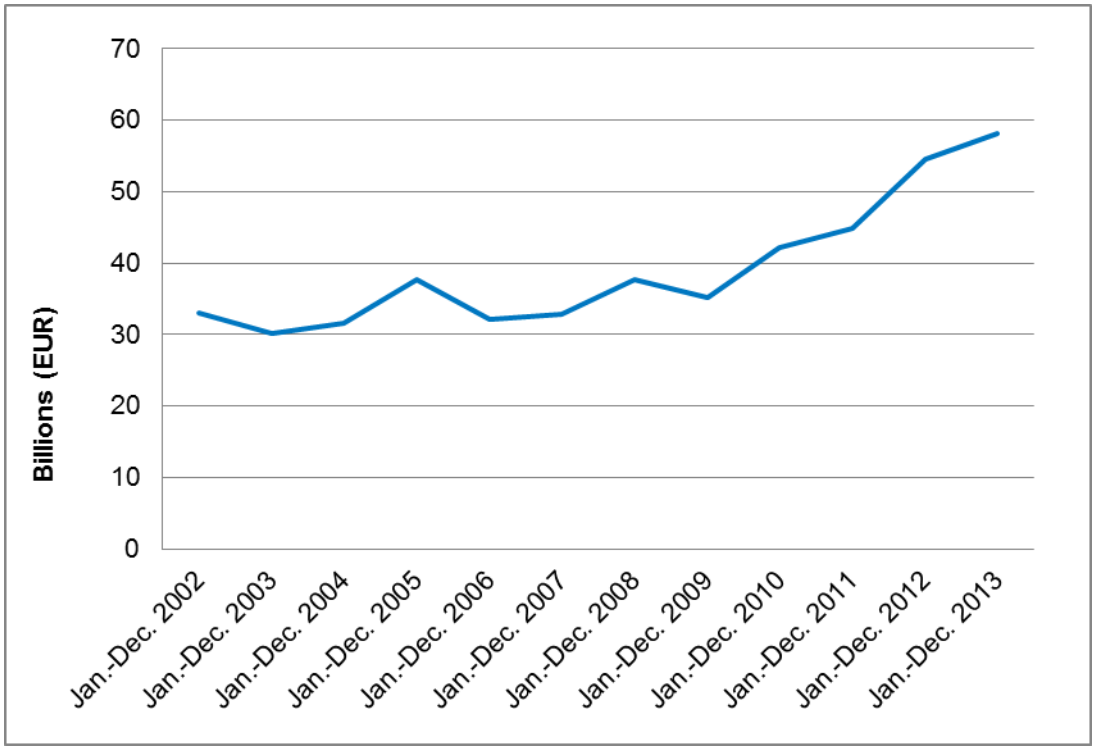
[66] AeroSpace and Defence Industries Association of Europe, Key Facts & Figures 2013, October 2013.

5.2.1 Aerospace Imports & Exports

The European Aerospace Sector as a Whole

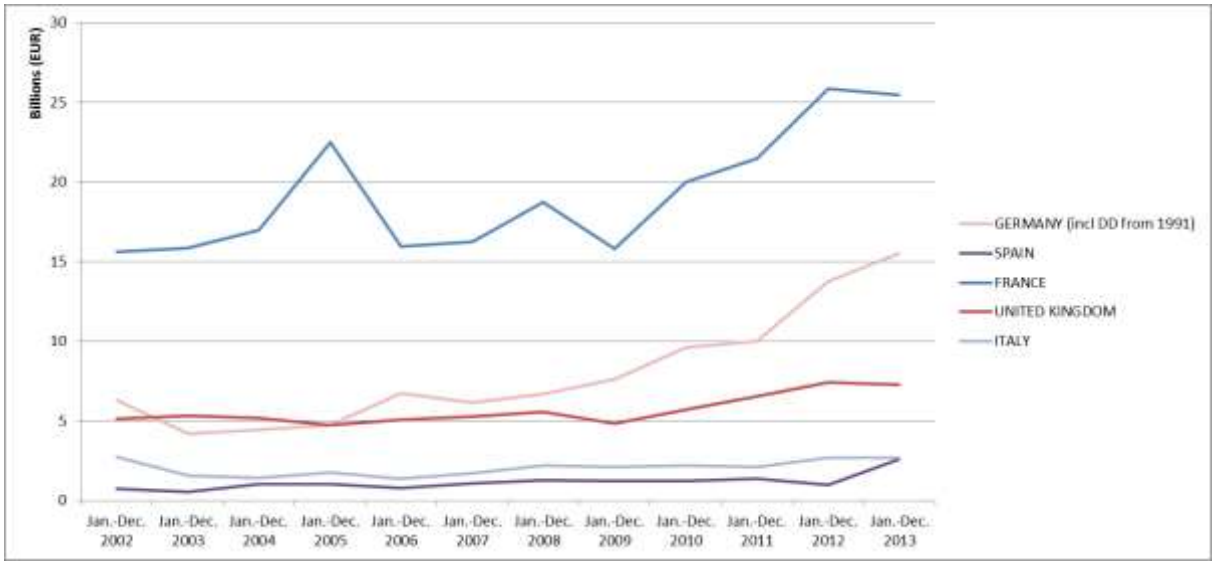
Europe's total aerospace exports grew yet more so in 2013. In 2012, the total aerospace exports to the world from the 27 countries making up the European Union at the time totalled €54.5 billion. Following Croatia joining the EU in July of 2013, the now 28 countries exported aerospace products worth just over €58 billion across the same year. This represents a +6.6% increase over 2012 and a CAGR of +5.6% since 2002. Since 2009, the EU has seen its exporting of aerospace products gradually increase – a great improvement upon the rather volatile years previous to this.

Figure 5.5: EU28 Aerospace Exports 2002-2013



Source: Eurostat

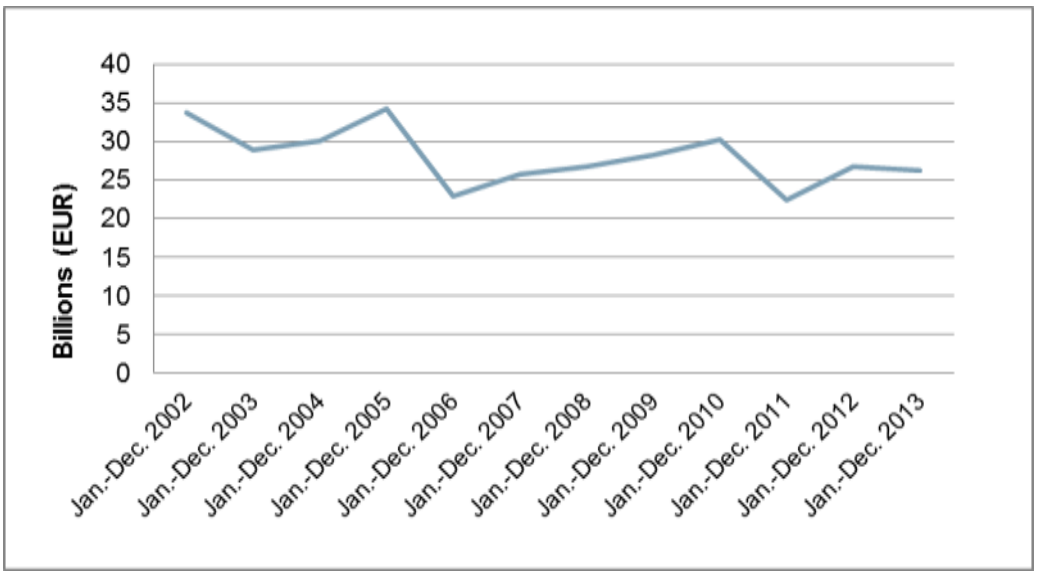
Figure 5.6: Top 5 EU Aerospace Exporters 2002-2013



Source: Eurostat

Figure 5.6 represents the top 5 EU Aerospace exporters between 2002 and 2013. Still recovering from the economic downturn of 2009, Germany, Spain and France still managed to see an increase in their aerospace exports when compared to 2012. Perhaps most noticeably, Spain's increase from €0.98bn in 2012 to €2.6bn in 2013 represents an impressive 161% rise between the two years. Spain's exports, as a whole, accelerated in September of 2013 giving rise to an impressive year for the euro-area's fourth largest economy which acts as testament to the impressive increase in aerospace exports. Spanish Deputy Trade Minister was quoted to have described the rise in Spanish exports as "particularly striking". Germany and France saw rises of 12.6% and 1.6% respectively whilst the United Kingdom experienced a slight decline of 2.2% and, Italy, an even smaller decline of 0.78%.

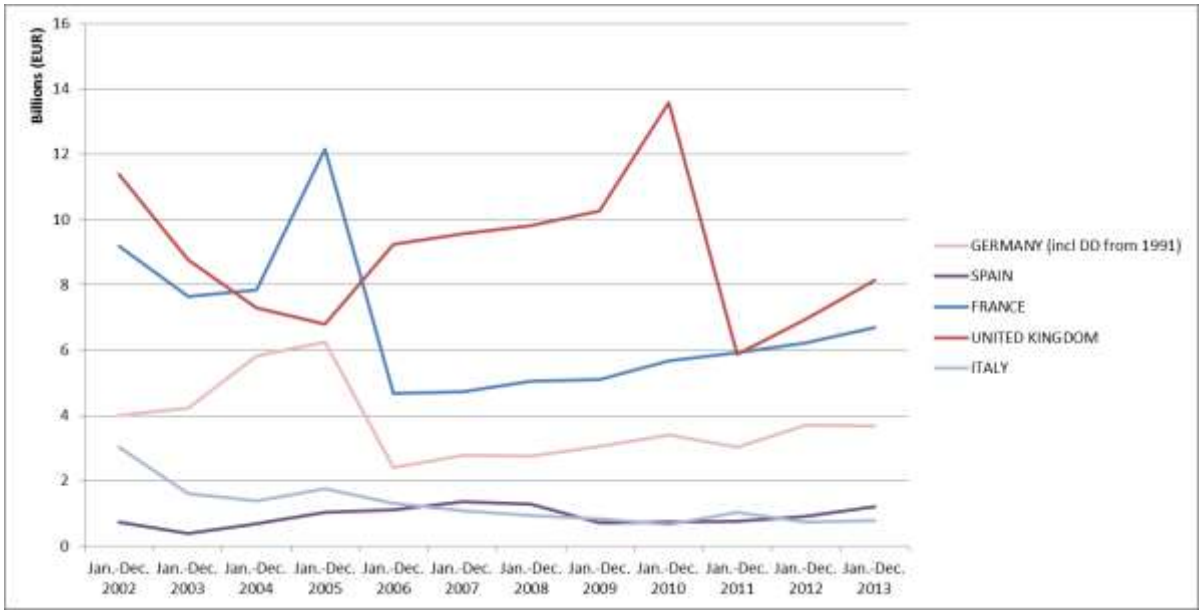
Figure 5.7: EU27 Aerospace Imports 1999-2013



Source: Eurostat

In 2013, aerospace imports[67] to European countries totalled €26.3 billion which represents a decrease of 1.68% versus 2012 and a further return to growth after the drop in imports seen in 2011 versus 2010. CAGR since 2002 remains negative at -2.05%.

Figure 5.8: Top 5 EU Aerospace Importers 2002-2013

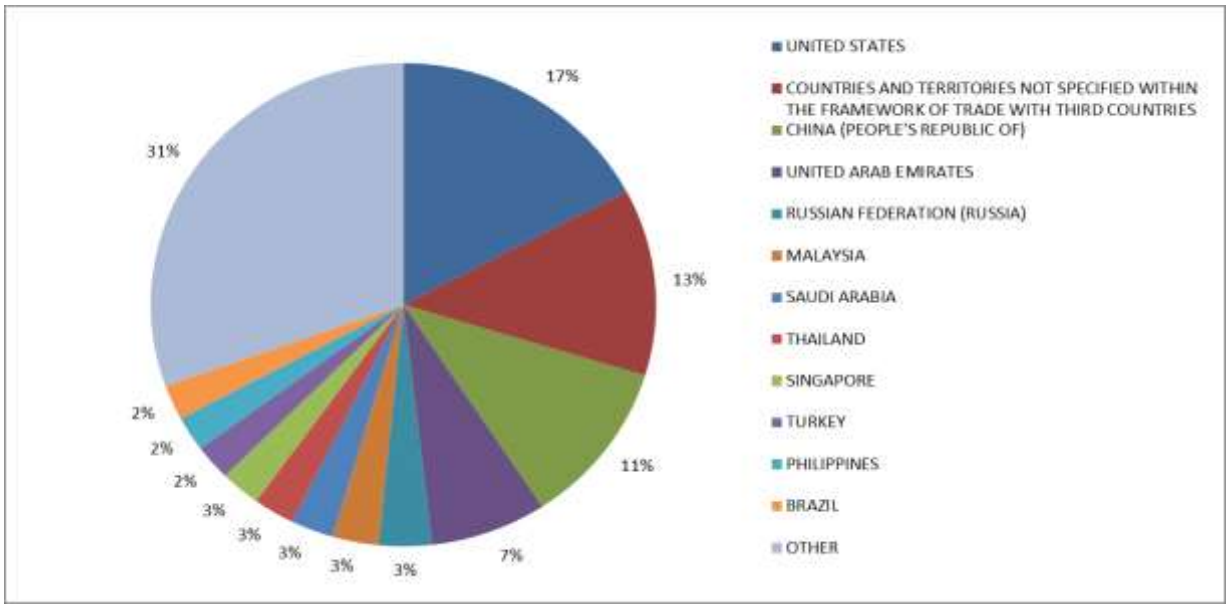


Source: Eurostat

Much like their impressive year in aerospace exports, Spain's imports experienced the greatest amount of growth in 2013, rising from €0.92bn in 2012 to €1.21bn in 2013 representing a 32.71% increase. The only nation to experience a decrease in 2013 was Germany which, though only marginal, saw a decline of 1.07%. The United Kingdom, Italy and France all experienced increases of 18.28%, 6.14% and 7.36%, respectively.

[67] Please note: all imports data refers to Eurostat SITC code 792 only which represents "aircraft and associated equipment; spacecraft (including satellites) and spacecraft launch vehicles; parts thereof".

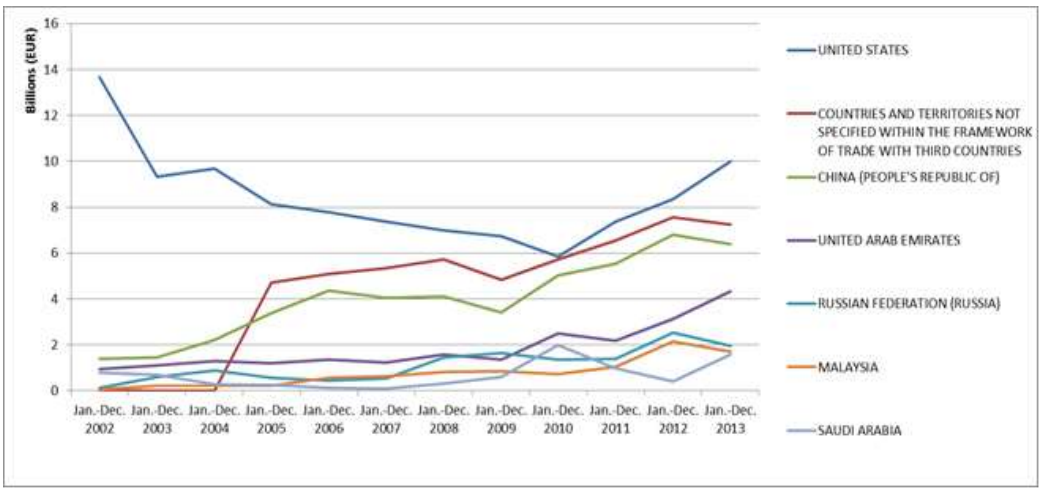
Figure 5.9: EU Aerospace Export Partners' Market Share 2013 (%)



Source: Eurostat (SITC 792 only)

Figure 5.9 represents the exact percentage breakdown of the top twelve EU aerospace export partners, in terms of value, themselves making up 69% of Europe's aerospace exports as a whole. There has been little change since 2012 in terms of market share however, in terms of value, Europe exported an added €1.7bn to the U.S. in 2013, bringing its total up from €8.35bn in 2012 to €10bn in 2013 (Figure 5.10). The United Arab Emirates experienced a 38% rise in aerospace products exported from the European Union in 2013 (€4.3bn) when compared to 2012 (€3.1bn). The most noticeable increase was experienced by Saudi Arabia which saw more than a tripling of its aerospace products exported from the EU, from €0.42bn in 2012 to €1.59bn in 2013.

Figure 5.10: Evolution of Aerospace Export Values to the Top 7 EU Export Partners, 2002-2013



Source: Eurostat (SITC 792 only)

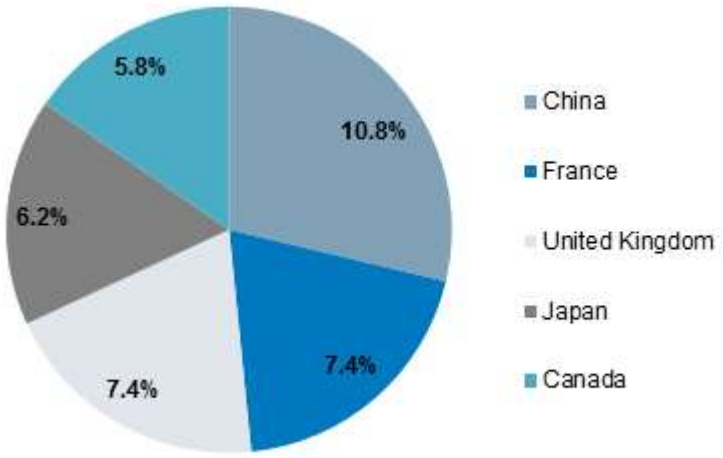
5.2.2 Global Aerospace Markets

United States of America

The United States has the single largest aerospace industry in the world; with provisional total industry sales in 2013 worth USD 220.1 billion, albeit a -0.9% drop from the USD 222 billion sales in 2012[68]. Civil aircraft account for 30% of this figure with USD 67 billion worth of sales in 2013, followed by military aircraft sales of USD 56 billion (25%). Projected figures reveal employment in the US aerospace industry slightly dropped from 631,400 in 2012 to 618,200 by year's end. Of this figure, there were 420,000 personnel employed in "Aircraft, Engines & Parts", 71,000 in "Guided Missiles, Space Vehicles & Parts" and 128,000 in "Search, Detection & Navigation Instruments".

Overall, US Aerospace exports in 2013 totals USD 128.74 billion[69], of which an estimated USD 98 billion relates to civil equipment[70]. This represents a dramatic +8.6% increase of USD 12.5 billion from the previous year's total. In 2013, the top five U.S. markets for Aerospace Products & Parts in descending order were China, France, the United Kingdom, Japan and Canada[71] (Figure 5.11). China, the largest single country export market for the United States aerospace industry, accounted for a 10.8% share equivalent to over USD 12 billion. France received 7.4%, valued at USD 8.6 billion, marginally ahead of the United Kingdom with USD 8.5 billion (7.4% of total exports). Japan and Canada received 6.2% and 5.8% of American aerospace exports, respectively.

Figure 5.11: Top five markets for U.S. Aerospace Products & parts, 2013



Source: U.S. Commercial Service, Aerospace Resource Guide – A Reference for U.S. Exporters, 2014-2015 Edition

Commercial aircraft represent the United States' leading manufactured export, despite being largely offset by losses in the domestic military market. On its own, the sector continues to remain an American success story, reports the Aerospace Industries Association. Much of its exporting success can be attributed to the

[68] Aerospace Industries Association, Year-End Review & Forecast – 2013

[69] U.S. Commercial Service, Aerospace Resource Guide – A Reference for U.S. Exporters, 2014-2015 Edition

[70] US Exports of Aerospace Products, Aerospace Industries Association, December 2012

[71] Wichita Regional Export Planning Initiative, Ten-county Export Market Assessment Report – July 2014

generous spending of the world's primary Large Civil Aircraft (LCA) manufacturers, Boeing and Airbus. European manufacturer, Airbus, claims to spend 42% of its aircraft-related procurement in the U.S. alone, buying more parts, components, tooling and other material from the States than any other country. Similarly, Seattle-based Boeing opts to buy the majority of LCA content from their home-market and state U.S. content accounts for 75%-95% of LCAs[72].

Canada

The Canadian aerospace industry is made up of over 700 companies that generated USD 25.1 billion in direct revenues across 2013, a +10% increase on the 2012 figure of USD 22.8 billion. Broken down, 70% of the industry's overall activity is dedicated to manufacturing whilst Maintenance Repair and Overhaul (MRO) represent 30%. Canada ranks third in terms of global civil aircraft production activity, just behind the U.S. and Europe and is a world leader in MRO as well as regional aircraft, landing gear systems and flight simulator design and manufacture.

Canadian aerospace manufacturers export nearly 80% of their products to highly diversified markets. It remains closely linked to the U.S. primarily because of the wealth of bilateral agreements that exist between the two nations. In 2013, 57% of total aerospace products were exported to the United States, 20% to Europe, 13% to Asia and 10% to Africa, the Middle East and Central/South America[73]. At the end of 2013, 172,000 Canadians were employed in the aerospace sector and it is thought this number will gradually rise as Canada begins to outpace the global market by growing twice as fast. This forecasting of rapid growth is based primarily upon the plethora of new platforms scheduled to enter the market from 2014 onwards. For example, at present, Canada does not compete in the large jet market but is expected to enter into this field in 2015 significantly changing the composition of Canadian aircraft production[73].

A total of 19 companies make up 87% of the aerospace industry as a whole. Bombardier, the largest of these and leaders in the regional aircraft sector, dominates aircraft production in Canada and produces a range of aircraft for the sub-100 seat regional market. Canada's regional aircraft production market is expected to reach 23% of overall aircraft production in 2014, far higher than the global figure of 5%. This is testament to the success of Bombardier, one of the top five largest aircraft manufacturers in the world, who through various acquisitions and mergers including de Havilland, Canadair and LearJet Corporation, produce a number of aircraft types principally for business and regional aviation operations. In September 2013, Bombardier saw its narrow-bodied, twin-engine C-Series successfully complete its first flight and orders for the 110- or 135-seat aircraft stand at 243 exactly one year later.

Japan

Japan's aerospace market appears relatively strong even in the wake of the Fukushima tsunami in 2011. The country's long-standing relationships with U.S. firms are testament to its success across 2013 and today, the region's manufacturers' supply around 35% of the content for the Boeing 787 Dreamliner, first operated by Japanese carrier All Nippon Airways in September 2011. Japan's total revenue is comparably rather small against other major countries. The year 2013 saw the country's revenue decline slightly to USD 17.1 billion compared with France's USD 54.8 billion and the United States' USD 199.6 billion but this is no doubt partly attributable to the continually declining Yen against the US dollar in recent months.

[72] U.S. Commercial Service, Aerospace Resource Guide – A Reference for U.S. Exporters, 2014-2015 Edition

[73] Aerospace Industries Association of Canada

At the end of 2013, imports from the U.S. alone totalled USD 8.4 million and Japan's aerospace market as a whole was worth USD 15.7 million, up +4.6% from the year previous. Total exports and imports amounted to USD 10 million and 8.1 million, respectively[74]. Japanese aerospace industry sales totalled just over USD 9.1 million at the end of 2012, down from USD 12.9 billion in 2011, which reflects the continual decline in sales across the past five years[75].

In spite of this, employee numbers at the end of 2012 stood at 35,411 persons, a 10.6% increase from the year previous. This steady growth in overall industry size is partly attributed to the active role played by Japanese companies in a number of aircraft manufacturing projects worldwide. As noted earlier, 35% of the Boeing 787 Dreamliner is made up of Japanese-manufactured materials and components. In addition to this, 21% of the world's largest twin-engine jet, the Boeing 777, as well as 15% of the Boeing 767 are the responsibility of Japanese manufacturers.

Japanese industries also contributed to all current and past Airbus aircraft types as subcontractors and/or suppliers, with a number of Japanese companies continuing to contribute to A380 production. With almost 40% of its output concentrated in civil aeronautics, overall production is linked to demand in North American and European markets and the corresponding manufacturing activity of Boeing and Airbus. Japan also has a strategic role as a supplier to the Bombardier CRJ and Embraer E170/190 aircraft families.

Japanese manufacturers are also heavily involved in many major aircraft engine families, most notably the International Aero Engines V2500-A5 as well as the GE90, PW4000, TRENT series and CF-34 whereby Japanese manufacturers' participation reaches 30% in the case of the latter. Japanese heavy engineering firms are also involved in producing components for the GEnx and Rolls-Royce Trent 1000 engines, as fitted to the Boeing 787, and have recently announced they will be participating in the global joint development of the PW1100G-JM engines for mounting on the Airbus A320neo which stands at over 3,200 orders from 60 customers worldwide in September 2014[76].

In terms of Japan's domestic development, Mitsubishi Aircraft Corporation is currently developing the next-generation MRJ (Mitsubishi Regional Jet), a 70 to 90 seat regional jet, due for delivery in 2015. Sales of the aircraft were originally sluggish, but as of September 2014, 375 MRJ's have been ordered[77]. A total of three North American carriers have so far placed orders for the aircraft, further strengthening the country's relationship with the U.S. as a whole.

Brazil

The Brazilian aerospace market is the largest in the southern hemisphere and the majority of Latin America's carriers believe the coming years hold promise given the upcoming 2016 Olympic Games and stimulus of the recent 2014 Football World Cup. The industry is led by Brazilian aircraft manufacturer Embraer who delivered 215 aircraft to its home market in 2013, 90 of which were commercial jets. Helibras, the Brazilian subsidiary of Airbus Helicopters, is another key player within the Brazilian

[74] U.S. Commercial Service, Aerospace Resource Guide – A Reference for U.S. Exporters, 2014-2015 Edition

[75] The Society of Japanese Aerospace Companies – Japanese Aerospace Industry 2014

[76] The Society of Japanese Aerospace Companies – Japanese Aerospace Industry 2014

[77] Mitsubishi Regional Jet

aerospace market and according to the Brazilian General Aviation Association; the region supported the world's third largest helicopter fleet in 2012[78].

Embraer, the world's third largest aircraft manufacturer, employs 19,304 people as of September 2014 and currently own 90% of the local market in Brazil. The year 2013 proved to be rather impressive with sales of business jets rising by 20% across the year and 2013 revenues overall reaching USD 6.2 million. Moreover, the company's backlog grew +46% from USD 12.5 billion in 2012 to USD 18.2 billion in 2013 further strengthening Brazil's position in the civil aircraft market. MRO in the region has gone from strength to strength in 2013, having enjoyed an annual expansion of 5-6% across the past few years and currently estimated at USD 600 million[79].

In overall terms the Brazilian aerospace industry is small compared to the major global players (the U.S., EU and Canada), but in terms of growth it experienced high performance; almost tripling between 2003 and 2008. However, in recent years, annual turnover has declined to around USD 6.8 billion in each year 2009 to 2011. It continues to build upon strong relations with the U.S. with Embraer importing around 50% of components from the States and Brazil as a whole acting as one of the top ten destinations for U.S. exports of manufactured aerospace products.

Russia

The Russian aviation industry remains one of the country's highest value-adding manufacturing branches and according to Russian statistics, the whole aerospace sector (civil, military and space industries), consists of 250 companies employing circa 400,000 people as of May 2014[80]. The region's military aviation market is far stronger than its civil sub-sector. Russia accounts for around 12% of the global military aviation market but only 1.1% of the civil market, with an average of just two dozen units of commercial aircraft produced each year. On the contrary, between 2009 and 2012, the country sold 224 military jets for USD 9 billion.

All Russian civil aircraft models are available in single units, tailored and modified to the individual customer's needs and requirements. This means production costs are notoriously high, while the quality of the end product is often rather low. Mass production of modified versions of the Ilyushin -76 and -86 aircraft was ceased some years ago whereas large scale assembling of a new long-haul commercial airliner (the Tu-204-300), which would naturally go through all tests and was certified, has never begun.

In 2013, the Russian civil aerospace market was predominantly made up of small-scale production of the Sukhoi SuperJet-100 (SSJ) (25 units in 2013). The newly-designed, 60-100 seat civil airliner was designed by Russian manufacturer Sukhoi in partnership with Boeing and is 80% made up of Western aircraft components. It was hoped the SSJ would compete with the likes of Embraer E-Jets and the Bombardier CRJ, but in reality, orders for the SSJ remain at a rather modest level in comparison. As of May 2014, just eight airlines worldwide operate the SSJ, five of which are of Russian domicile.

Despite the Russian civil aviation industry proving to be rather small when placed on a world platform, helicopter production in the region is strong. In 2013, *Russian Helicopters* (the Russian helicopter production holding), manufactured a total 275 rotorcraft and went on to sign up an impressive order book

[78] U.S. Commercial Service, Aerospace Resource Guide – A Reference for U.S. Exporters, 2014-2015 Edition

[79] U.S. Commercial Service – Doing Business in Brazil, 2014

[80] Switzerland Global Enterprise – Russia, The Aviation Industry – May, 2014

of more than 800 helicopters by the end of the year. Further strengthening Russia's position in the global military market, *Russian Helicopters* enterprises produced approximately 35% of the worldwide combat helicopter fleet and nearly three quarters of the global ultra-heavy helicopter fleet in 2013.

Looking ahead, the Russian Government plans to invest $28 billion into its aviation industry by 2025 in order to bring the country up into the world's top three aircraft manufacturers. This is hoped to increase its stake in global civil aircraft production to +3.2%[81]. At the beginning of 2013, the commercial fleet of Russian operators accounted for 2,800 aircraft units, 60% of which were Western made. It is hoped the government's strategy will begin to see the Western world's stake in Russia's civil aviation industry slowly decline as Russian manufacturers begin to improve.

The MS-21, a short- and medium-haul narrow body aircraft, designed for both Russian and international aircraft markets is the most advanced project for the production of a new civil aircraft in Russia. The family consists of three models and the start of production is currently planned for 2017.

Ukraine

Ukraine is home to the aircraft manufacturer, Antonov State Company (formerly the Antonov Design Bureau). The principle aircraft under production by Antonov at present is the AN-148 and the first serially produced model was delivered to a Cuban airline in April 2013, followed by a second delivered in late July.[82]

Antonov has proven itself to have international appeal, commonly called upon when there's a load in the world that's simply too big or too heavy for any other aircraft to haul. The Kiev-based manufacturer proudly designs and produces the world's largest cargo plane, the AN-225, which has the ability to carry more than twice the maximum load of a Lockheed C-5 Galaxy. Unfortunately, however, 2013 saw Antonov fall on hard times following the near state-of-war that existed between Russia and Ukraine as of September 2014. It was forced to take a $150 million loss in early 2013 by cancelling a project to supply the Russian Air Force with a military version of its medium-range AN-148, in protest over the annexation of Crimea. A joint venture between Ukraine and Russia was also planned in order to construct a brand new military transport plane, the AN-70 but although this partnership is no longer going ahead, Ukraine own the design and continues to pitch it to Western air forces.

In the short-term, the future of Ukraine's aerospace industry depends largely upon the success of Antonov, a state-owned company. The continuing separation of two long-standing partner countries is already proving to have a detrimental effect on the Ukrainian aerospace industry.

China

In 2013, China continued to prove itself a force to be reckoned with and today acts as the second largest air travel market in the world, just behind the U.S. The industry in the region has been growing at double-digit rates for several years now and this growth is expected to remain very strong over the medium term, especially considering the rise in aircraft numbers from 2,888 in 2011 to an estimated 4,500 by 2020[83]. Air

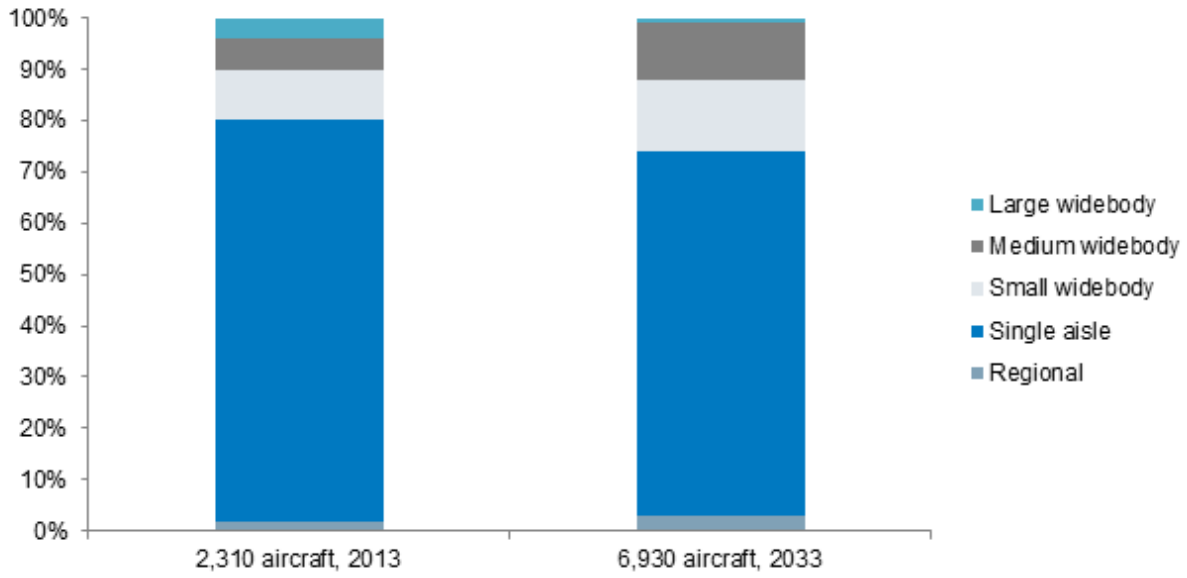
[81] The Moscow Times, 16 May 2014

[82] Centre for Transport Strategies, December 2013.

[83] U.S. Commercial Service, Aerospace Resource Guide – A Reference for U.S. Exporters, 2014-2015 Edition

China, China Southern and China Eastern (among the world's top 10 airlines) alongside the remainder of Chinese airlines are expected to add over 6,000 new aircraft valued at USD 780 billion by 2032.

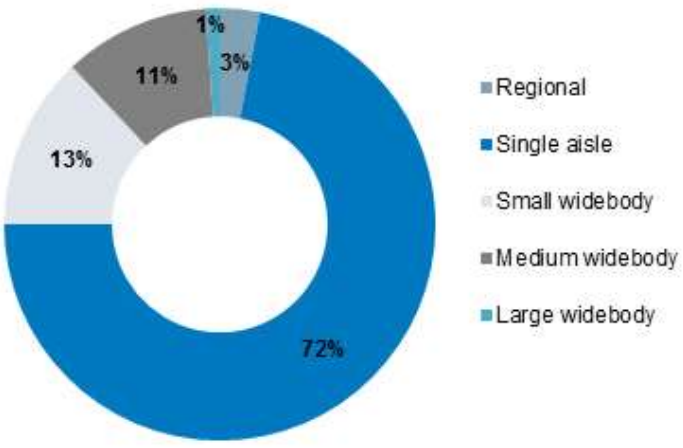
Figure 5.12: Comparative fleet sizes, Chinese aerospace market (2013 & 2033)



Source: Boeing

China's demand for aircraft parts is continually growing, not least because of the increasing capacity utilisation rate and the rapid expansion of China's aircraft fleet. In 2011, China's total aircraft parts world trade volume reached USD 66 billion but in 2013, this figure rose to USD 86 billion.

Figure 5.13: Number of new aircraft orders by type, 2013-2033



Source: Boeing

COMAC, the Commercial Aircraft Corporation of China, was established in 1998 by a number of Chinese Manufacturing and Financing Agencies, to develop and build large commercial aircraft and reduce the

dominance of Boeing and Airbus aircraft across Chinese aircraft sales. It is expected to drive China into becoming one of the world's biggest aircraft manufacturing markets and thus break into the Western markets currently dominated by Seattle-based Boeing and Toulouse-based Airbus.

Its latest product comes in the form of the COMAC ARJ-21 which stood at 252 orders as of May 2014. The aircraft can seat 78 to 90 passengers and successfully completed test flights in North America in March and April of 2013. It was scheduled to be delivered in 2007 but has found itself subject to numerous delays and thus delivery was pushed back. COMAC is primarily targeting the Chinese domestic market and flights to and from Southeast Asia with its ARJ-91. Its larger C919 single-aisle jet, with seating of up to 168 passengers, is the means by which China hopes to finally compete with the manufacturing giants that are Boeing and Airbus. 400 orders have already been placed for the C919 and its maiden flight is currently scheduled for the end of 2015, with first delivery expected in 2018. Despite a promising number of orders, it is thought the major delays brought about as part of the ARJ-21 programme are enough to deter many carriers from purchasing the new C919.

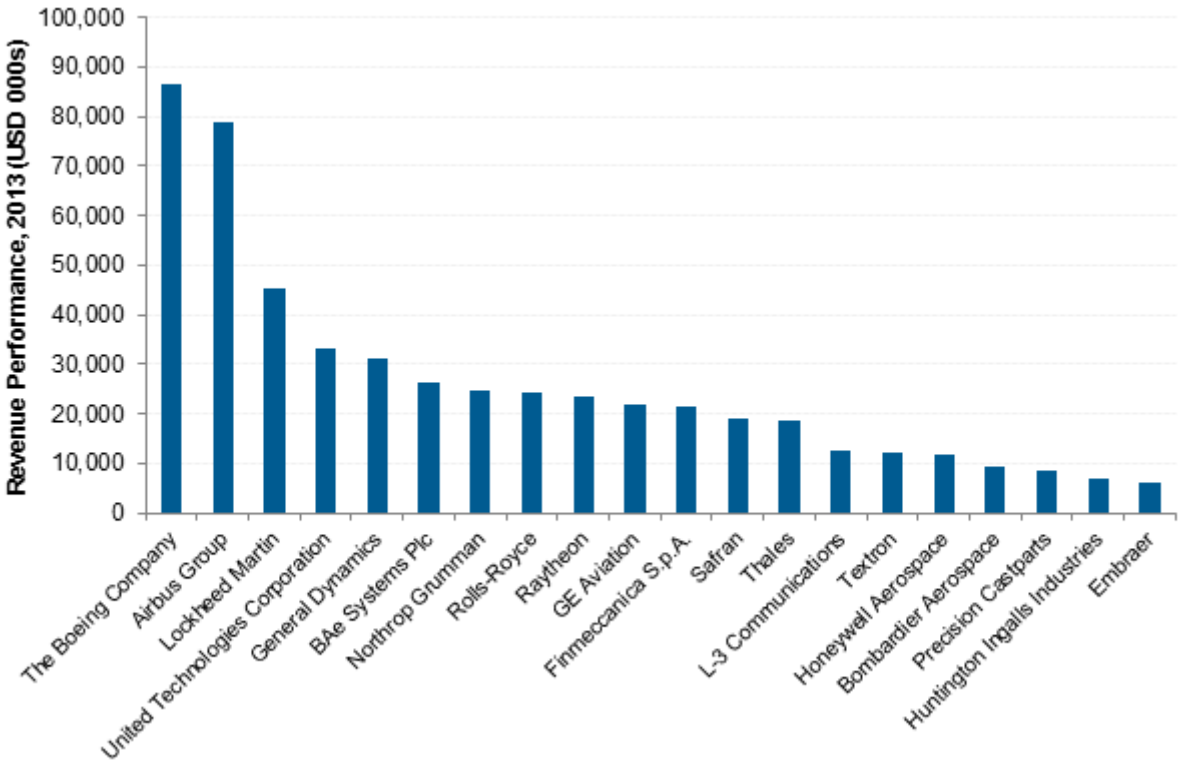
COMAC itself is testament to how quickly the Chinese aerospace market is growing. Since 2008, the company has grown from 3,800 employees to 8,300 recorded at the end of 2013.

Looking to the future, the Chinese aerospace market is unsurprisingly expected to rapidly develop yet more so. The growing domestic market is expected to drive the orders of single-aisle aircraft, themselves expected to make up almost three quarters of new aircraft orders by 2033. New LCCs alongside increased growth in established airlines will drive a need for 4,340 single-aisle aircraft in 2033.

5.2.3 Aerospace Companies

Europe and the United States dominate the world's leading aerospace companies by revenue. Canada's Bombardier is the only non-US or EU entity in the leading 20 companies in 2013. The total revenue of the top 20 aerospace companies is USD 506 billion. EU-headquartered firms contributed USD 176 billion of this revenue (34.8%). Boeing is just marginally ahead of Europe's EADS in terms of revenue (Figure 5.15). As was the case in 2012, EADS and BAE Systems were respectively the second and sixth largest aerospace companies in the world in 2013.

Figure 5.14: Top 20 Global Aerospace Companies' Revenue Performance, 2013



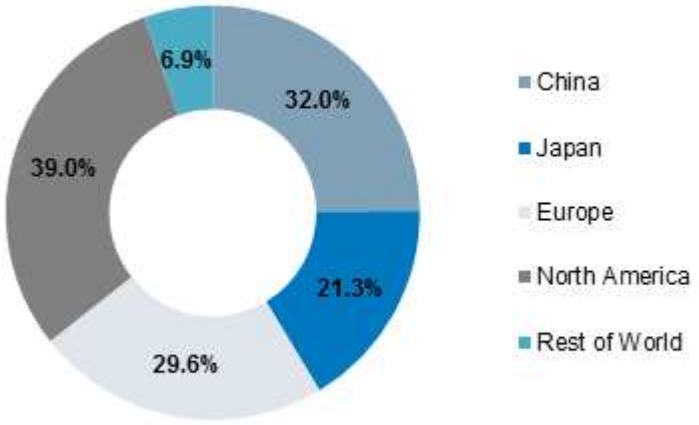
Source: Deloitte

5.2.4 Research & Development

Overall R&D spending amongst the top 1,000 spenders across the world reached a record high of USD 638 billion in 2013[84]. In dollar terms alone, North America finds itself in top position having spent USD 248 billion over the last year – an +8.6% increase over 2012. Europe remains the second-highest spender but its USD 189 billion R&D expenditure in 2013 represents just +4.5% growth since the previous year.

[84] Booz & Co., The 2013 Global Innovation 1000 Study

Figure 5.15: Global R&D spending by headquarter region (USD billion)



Source: Booz & Co.

When compared to other industries, the global Aerospace and Defence sector spent a comparably small amount on Research & Development in 2013. Of the USD 638 billion global expenditure, just 3% was in the Aerospace and Defence industry.

The European aeronautics industry continues to contribute a large share of its activity to research and development (R&D). The EU 2020 Strategy set a target of 3% of GDP[85] to be dedicated to R&D and innovation. In 2013, R&D expenditure in the European aerospace market amounted to €16 billion, up from €13.8 billion in 2011 and representing 8% of the overall European Aerospace and Defence turnover.[86] Breaking these figures down yet more so, total R&D breakdown is 80% aeronautics (€16 billion) and 20% defence (€4 billion) and of the total R&D expenditure, one third is assumed to be financed by governments.

The EU Industrial R&D Investment Scoreboard analyses the world's top 2000 companies' investment in research and development. Its latest report states that EU-based Aerospace and Defence companies outperformed the R&D growth of their US counterparts (9.5% vs. -1.3%)[87]. Both Europe-based Airbus Group, formerly EADS, and Seattle-based Boeing recorded R&D expenditure in excess of USD 3 billion in 2012 though EADS reached this level by averaging 3.5% growth across the last two years in comparison to Boeing who have experienced a 10% decline since 2010.

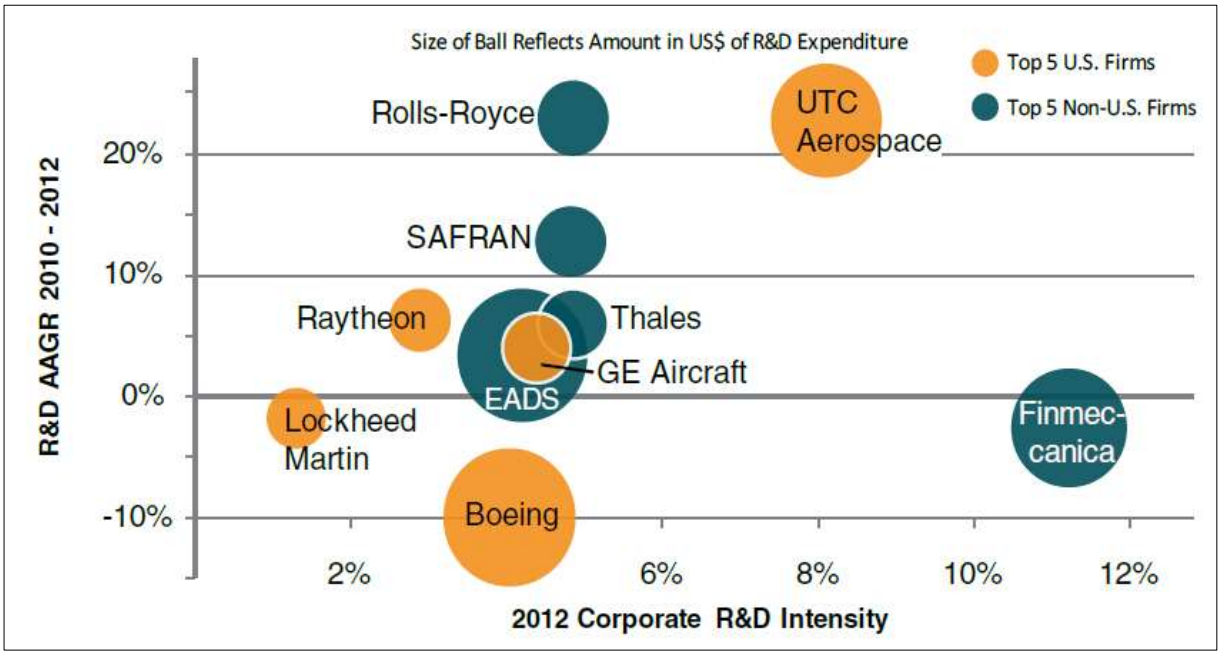
The Battelle Global R&D Funding Forecast reports the top five non-U.S. aerospace companies by R&D spend (2012) are all European and consist of EADS (Airbus Group), Finmeccanica, Rolls-Royce, SAFRAN and Thales (see Figure 5.16, Italy's Finmeccanica saw a decrease in R&D spend over the last two years but still maintained the highest R&D intensity amongst U.S. and global leaders.

[85] Science, technology and innovation in Europe, 2010 edition, Eurostat, European Commission

[86] Aerospace and Defence Industries Association of Europe, Facts and Figures 2013

[87] European Commission, The 2013 EU Industrial R&D Investment Scoreboard

Figure 5.16: Leading U.S. and global aerospace companies by R&D spend, 2012



Source: Battelle

In 2000, European leaders set a clear goal to become a global leader in the fields of aeronautics and aerospace. The "European Aeronautics: A Vision for 2020" report, published in 2001, still applies today and details the way in which Europe hopes to achieve such global status by 2020. The Advisory Council for Aeronautics Research in Europe (ACARE) was set up alongside the report and acts as the primary aid in achieving the goals of Vision 2020. As of October 2014, the primary aerospace projects already proving to benefit the industry as a whole are the Clean Sky Joint Technology Initiative, the SESAR Joint Undertaking, national programmes in a number of EU Member States as well as a wealth of private company programmes. As the centre-piece behind Europe's research and development in the aerospace sector, ACARE has since released its vision beyond 2020 for the horizon towards 2050 and identifies goals as well as challenges which face the European aerospace industry over the next three decades.

5.3 The Global Aircraft Fleet in 2013

The data source used to analyse global aircraft fleets are CAPA's Fleets database alongside Flightglobal.

Aircraft types have been assigned a market grouping due to their size/seat capacity category. Table 5.2, following, identifies aircraft types by market group, as used in the analysis contained in this section.

Table 5.2: Global Aircraft Fleet Classification & Market Grouping, December 2013[88]

Widebody Jet	Narrowbody Jet	Regional Jet	Turboprop
Airbus A300	Airbus A318	Antonov AN72	Antonov AN12
Airbus A330	Airbus A319	Bombardier CRJ100	Antonov AN24
Airbus A340	Airbus A320	Bombardier CRJ1000	Antonov AN26

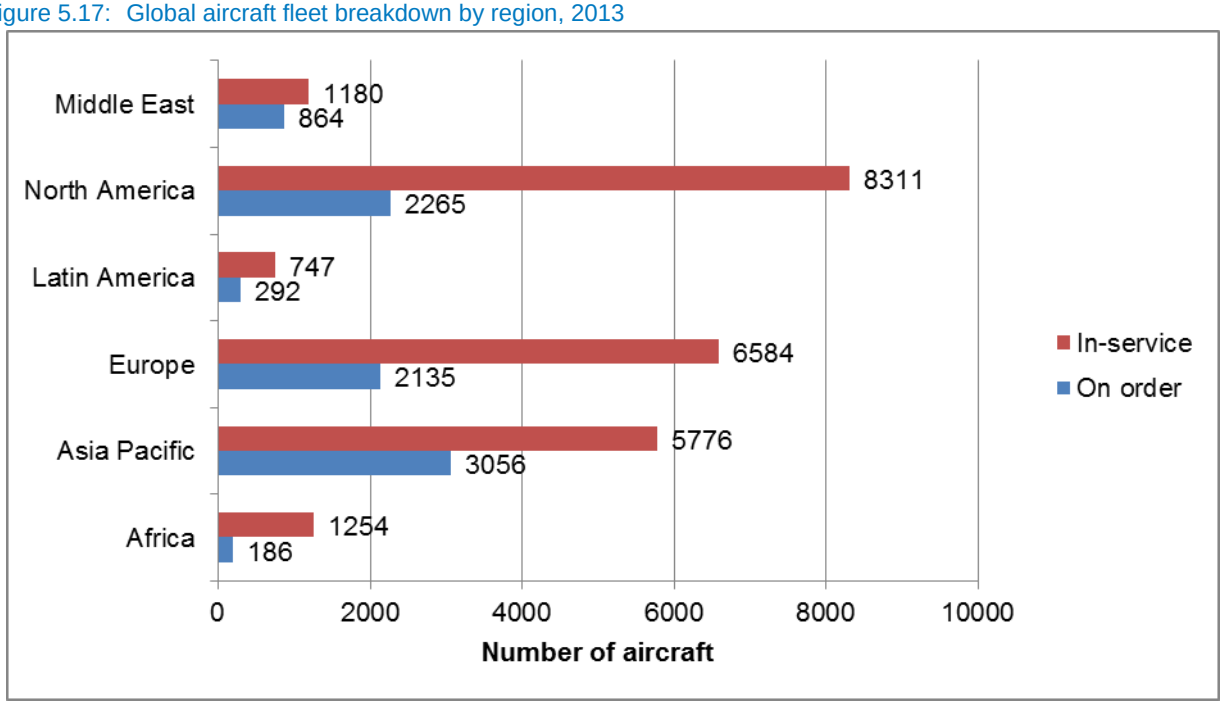
[88] Table lists aircraft types of which had more than 50 in-service as of December 2013.

Widebody Jet	Narrowbody Jet	Regional Jet	Turboprop
Airbus A380	Airbus A321	Bombardier CRJ200	ATR 42
Boeing 747	Boeing 717	Bombardier CRJ700	ATR 72
Boeing 767	Boeing 727	Bombardier CRJ900	Beech Aircraft Corp. 1900
Boeing 777	Boeing 737	British Aerospace 146	Beech Aircraft Corp. 200
Boeing 787	Boeing 757	Dornier DO328JET	Beech Aircraft Corp. 99
McDonnell Douglas DC-10	McDonnell Douglas DC-9	Embraer E170	Bombardier DHC8
McDonnell Douglas MD-11	McDonnell Douglas MD-80	Embraer E175	Douglas DC3T
Ilyushin IL86	Ilyushin IL62	Embraer E190	British Aerospace ATP
Ilyushin IL96	Tupolev TU134	Embraer E195	British Aerospace 3100
Lockheed L1011	Tupolev TU154	Embraer E145	British Aerospace 4100
		Fokker 28	Britten Norman 2
		Fokker 100	Cessna Caravan 208
		Sukhoi SSJ	De Havilland Canada DHC6
		Yakovlev YAK40	Dornier DO228
		Yakovlev YAK42	Embraer E110
			Embraer E120
			Fairchild Metro
			Fokker 27
			Fokker 50
			Grumman G159
			Hawker Sidley HS748
			Ilyushin IL18
			Let L410
			Lockheed L188
			Saab 340
			Shorts 330/360

Source: CAPA Fleets

Where analyses by world region are undertaken, aircraft are assigned to the geographically defined region to which its country of registration belongs.

Figure 5.17: Global aircraft fleet breakdown by region, 2013

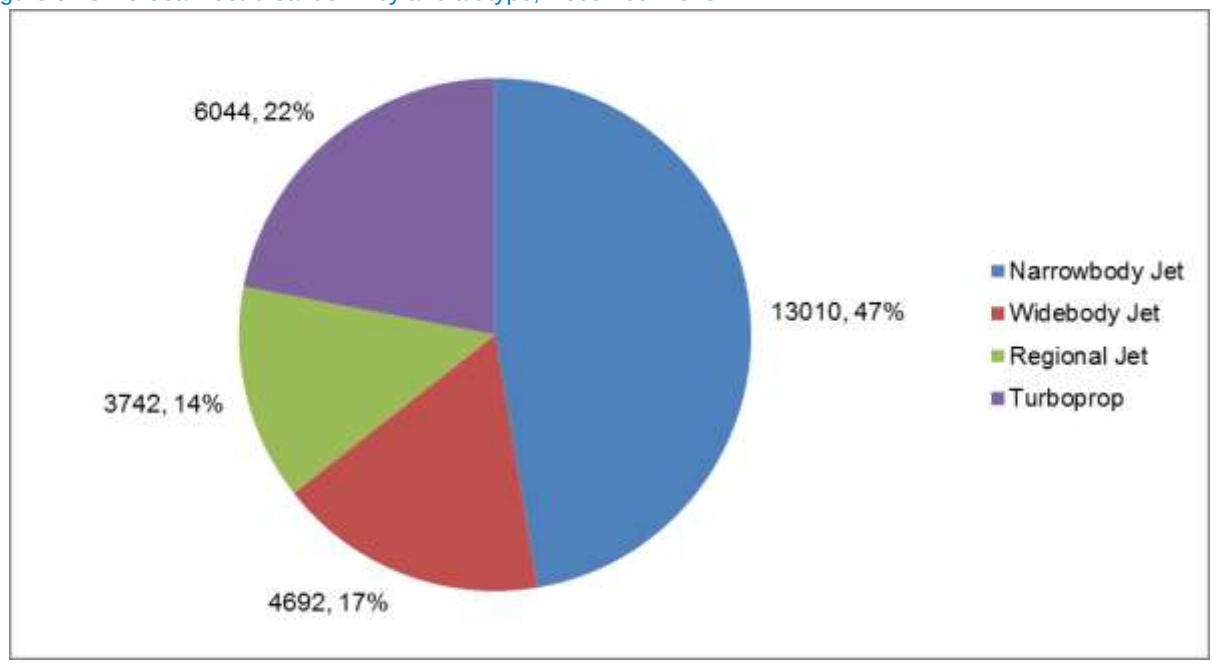


Source: CAPA Fleets Database

As of December 2013, airlines across the world make up a global fleet of 40,005 aircraft[89] with 27,661 in full service and 12,344 on order. Figure 5.17, previous, shows the majority of the global fleet can be found in North America where the total number of aircraft in service as of December 2013 reaches 8,311. Looking forward, Asia Pacific falls just under North America at 5,776 aircraft in operation but most notably leads the way in terms of aircraft orders – expecting 3,056 aircraft to be delivered between now and 2034.

[89] Please note: this does not include aircraft in storage, retired or cancelled.

Figure 5.18: Global fleet breakdown by aircraft type, December 2013[90]



Source: CAPA Fleets Database

Narrow-body aircraft continue to dominate the world's fleet with a total 13,010 in service across the globe at the end of 2013 compared to a wide-body fleet of 4,692 (see Figure 5.18). Over the past two decades, airlines in North America and other mature markets have shifted from flying the larger, wide-body aircraft to single-aisle, narrow-body aircraft principally on domestic routes. Boeing states that in 1993, wide-body aircraft supplied around 20% of capacity in North America but today, that number has dropped quite significantly to just 5%. The same trend can be seen in China, where 9% of today's fleet are narrow-bodies compared to 30% twenty years ago.

The worldwide fleet of narrow-body aircraft has seen a plethora of success stories across the twelve months of 2013. Boeing received just fewer than 700 orders of their 7 37 MAX by the end of 2013 and by February of the following year, the company began producing the model at a record rate of 42 per month – expected to increase to 47 per month by 2017[91]. Airbus received a $10.2 billion order in November 2014 for 250 jets, 100 of which were made up of A320/A321 aircraft.

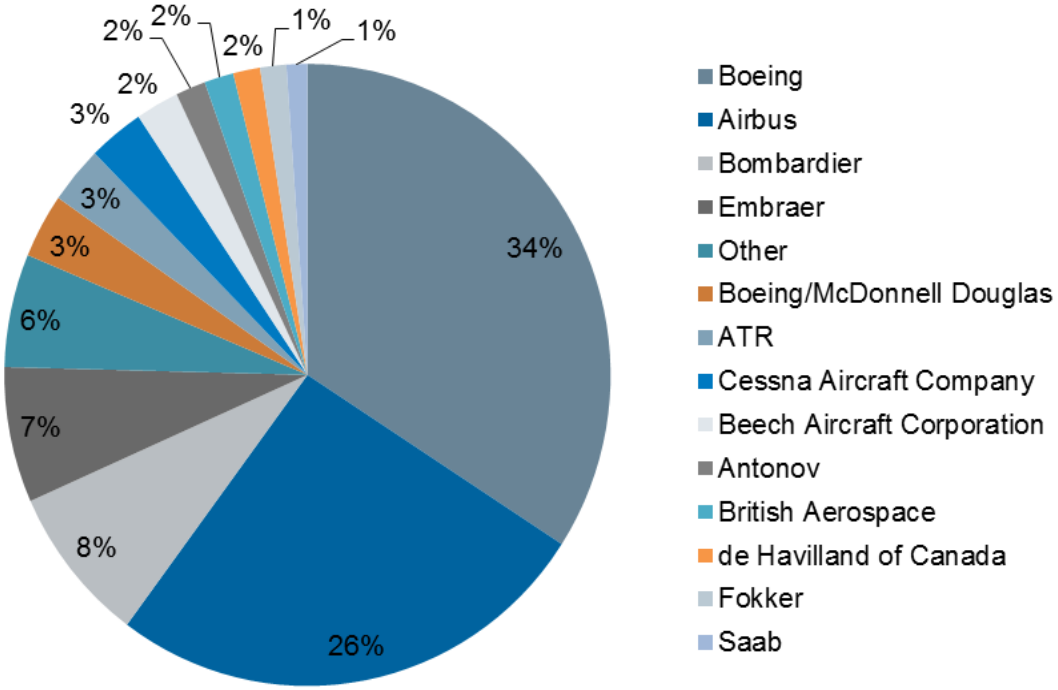
Predominantly favoured by low-cost carriers across the globe, part of the narrow-body's increasing success is the rapid growth rate of LCCs experienced over the last decade. According to OAG, since the early 2000s the number of seats offered by LCCs has increased at an impressive 14% per year compared to a 1% average annual rise in capacity among legacy carriers.

Boeing and Airbus continue to dominate the market, making up 60% of aircraft currently in service across the world. Figure 5.19, following, represents the global fleet breakdown by manufacturer.

[90] Please note: Figure excludes business jets, military transport and piston engine aircraft

[91] CAPA – Singapore Airshow 2014, A CAPA Preview. February 2014

Figure 5.19: Global Fleets Breakdown by Manufacturer, December 2013



Source: CAPA Fleets Database

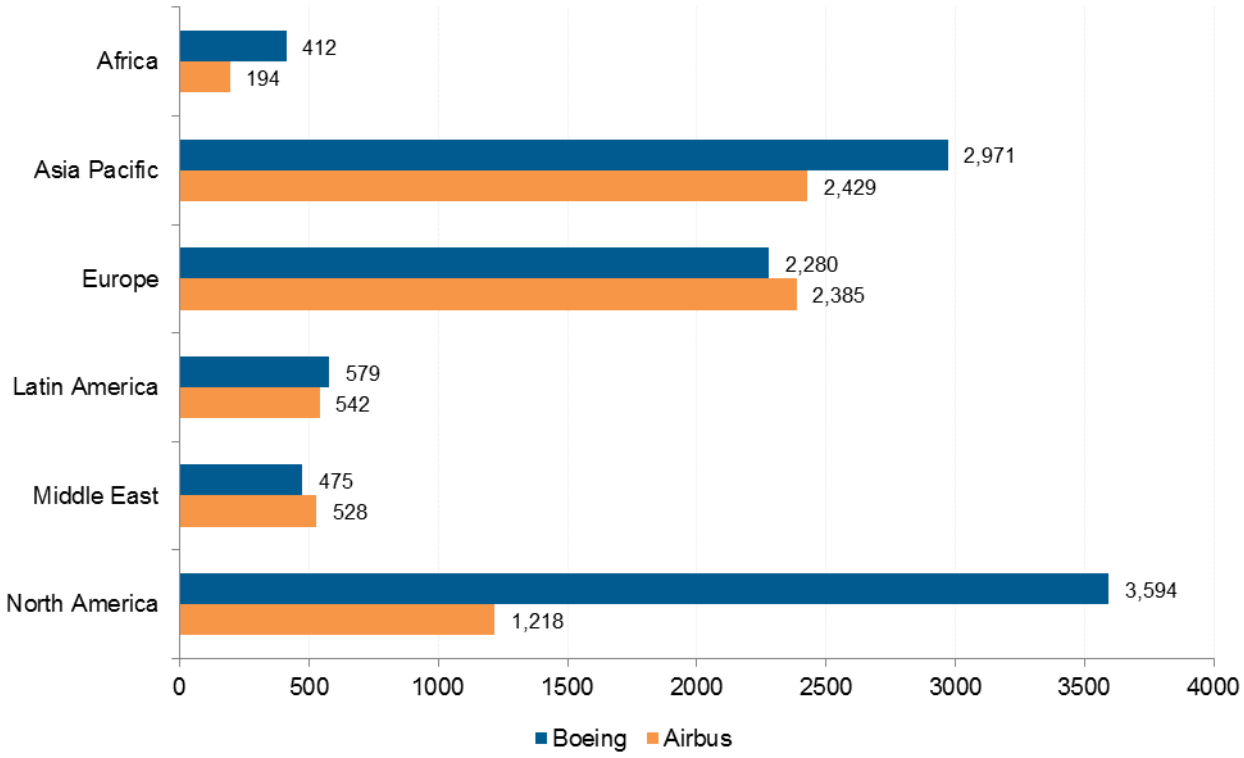
As of August 2014, Boeing was ahead of its European competitor in contrast to the end of 2013 when Airbus was ahead of Boeing in net commercial aeroplane orders. The successful launch of the new wide-body Boeing 777X has undoubtedly given Boeing the boost it needs to overtake Airbus in the order books. Airbus, on the other hand, has been forced to endure a large order cancellation from UAE-based Emirates following the airline's decision to review its fleet plans.

At the end of 2013, however, Airbus recorded an industry-wide record of 1,619 orders across the year and the delivery of 626 aircraft to 93 customers across the world. By contrast, Boeing managed 1,531 gross commercial orders and the delivery of 648 aircraft. Despite not beating its Toulouse-based rival, in 2013 Boeing still managed to achieve the second-largest amount of net commercial orders in its history (1,355) despite a series of problems with its 787 Dreamliner last year. The fire break-out on-board an Ethiopian Airlines flight parked at LHR alongside a wealth of similar issues experienced by other carriers across the world meant deliveries of the carbon-fibre aircraft were halted for four whole months.

5.3.1 Jet Aircraft Fleets by Region

Figure 5.20 shows a breakdown of the global fleet in a regional context, highlights the major markets for civil airliner jets and indicates the degree of competition between Boeing and Airbus in those regions.

Figure 5.20: Boeing & Airbus Operating Civil Jet Fleet by Region 2013



Source: Flightglobal ACAS

As can be expected given the size of the fleet of out of production aircraft in the United States, Boeing continues to maintain a stronghold is its home market of North America, where it accounts for 75% of the civil jet fleet in that region. While Boeing could be expected to remain a clear leader within the U.S., American Airlines' order of 260 Airbus A320 aircraft in July 2011 paved the way for the European manufacturer to gradually increase its market share within the States. U.S. operators are beginning to re-fleet with the A320 family of aircraft, itself proving to be Airbus' best seller in the U.S., and flying with carriers such as Frontier Airlines, Delta Air Lines, United Airlines and Virgin America.

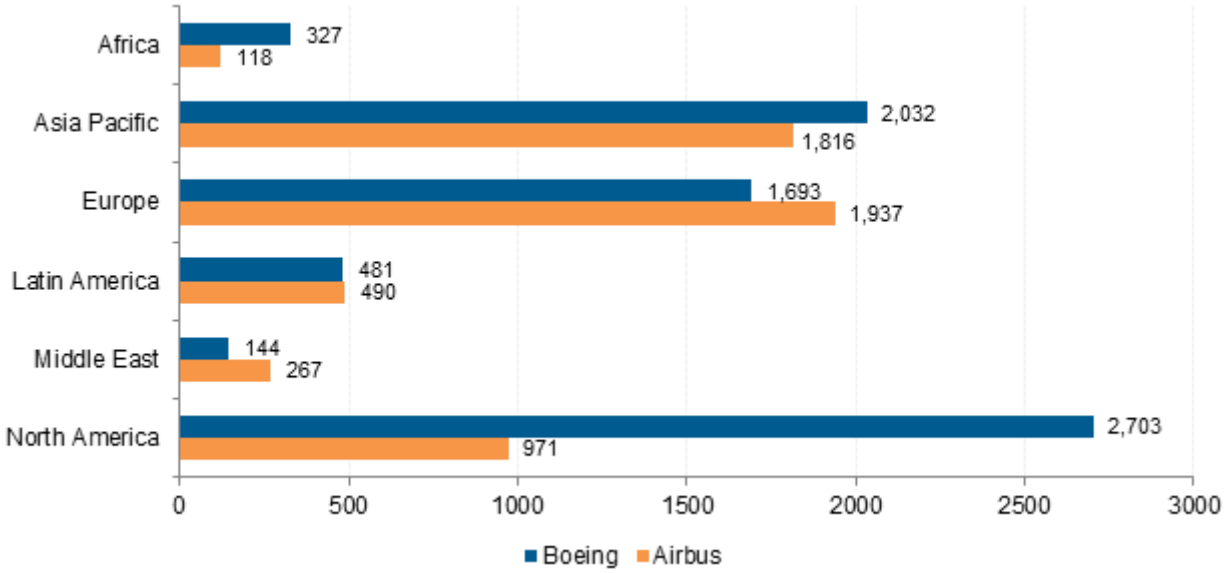
It might be expected for Airbus to be stronger than Boeing in Europe but this is not the reality – Airbus has a slight 4% advantage over its rival amongst European carriers. Two of the largest low cost carriers, Ryanair and Norwegian both currently operate all Boeing fleets, balancing the predominantly Airbus narrow-body fleets of the major European flag carriers and easyJet. While European airlines tend to maintain single manufacturer narrow-body fleets, the wide-body fleets tend to be more diverse, with Air France, British Airways, Lufthansa and Turkish Airlines all operating a mixed Boeing/Airbus long haul fleet.

The Asia-Pacific region has been a key battleground for the two manufacturers throughout the last two decades. Boeing has gained market share through its dominance of the dense air transport market in Japan. Airbus has an established physical presence in the Asia Pacific region with final assembly production line (dedicated to A320s) established in Tianjin, China. The Japanese manufacturing industry has a heavy presence in current-production Boeing twinjet programs, whilst China has grown its supply chain role in both Boeing and Airbus products. Airbus made a breakthrough in the Japanese market in

October 2013 when JAL ordered 31 Airbus A350 series for delivery from 2019. Currently, JAL is a Boeing only operator.

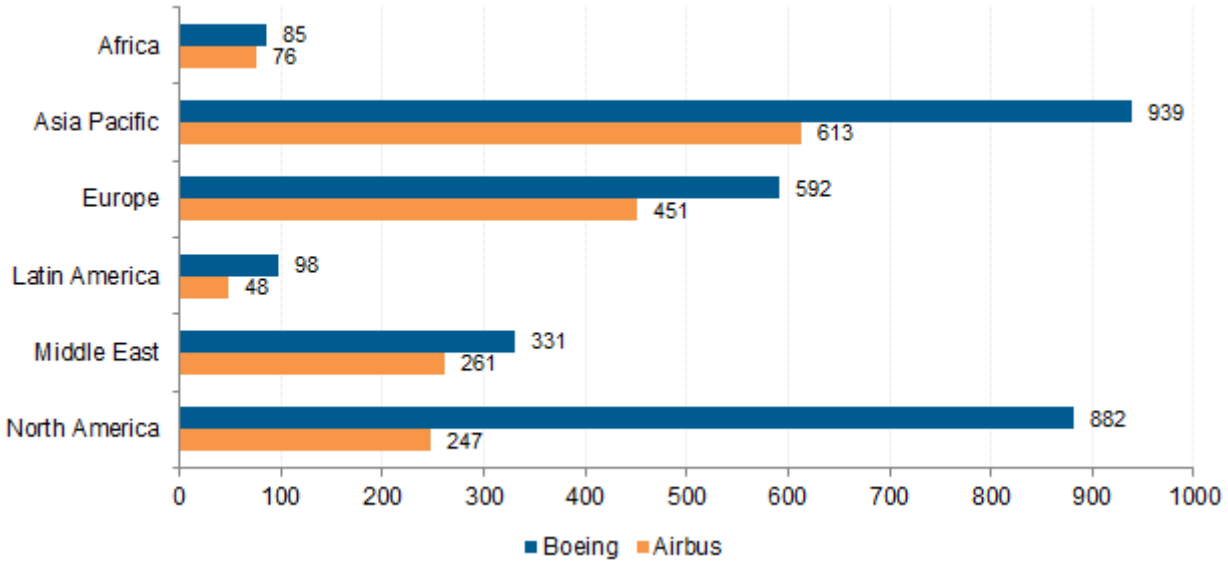
Figure 5.21 and Figure 5.22 consider the regional situation when the global fleet is separated into narrow-body and wide-body aircraft types. The three regions with the greatest concentrations of narrow-body types are North America, Europe and Asia Pacific; together they account for 89% of the 2013 global total, slightly down from 2012 reflecting fleet growth by some major airlines. Again, Boeing dominates the North American narrow-body market with almost 74% of market share. For wide-bodies, the continuing popularity of the Boeing 777 in the Asia Pacific region has enabled the US manufacturer to command over 60% of market share in the region.

Figure 5.21: Boeing & Airbus Narrow-body Jet Fleet by Region 2013



Source: Flightglobal ACAS

Figure 5.22: Boeing & Airbus Wide-body Jet Fleet by Region 2013



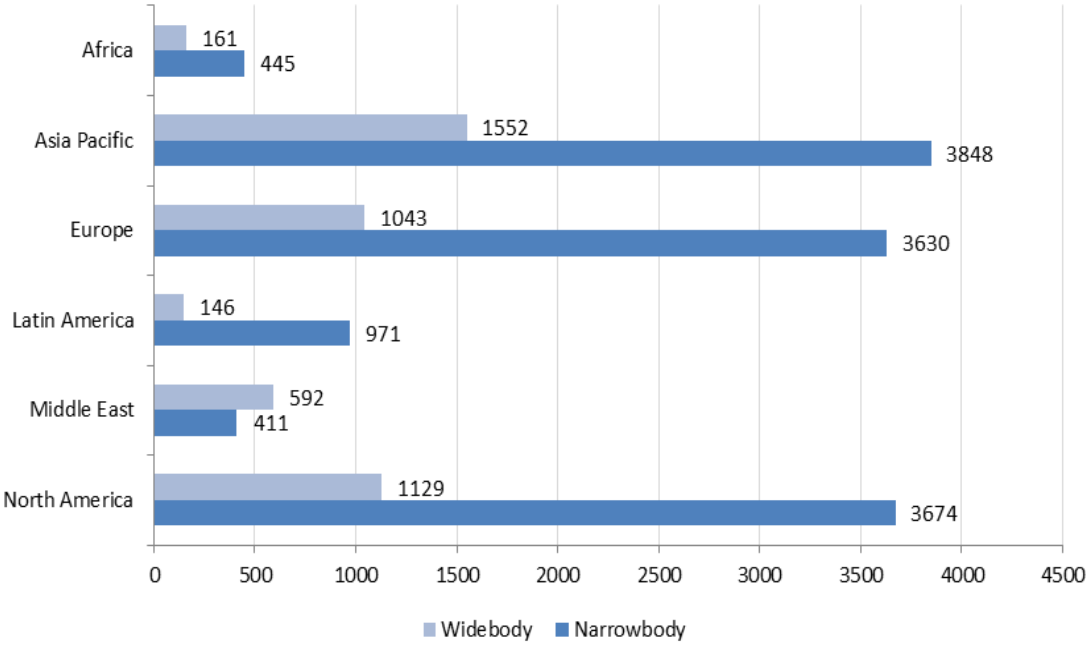
Source: Flightglobal ACAS

As was the case in 2012, the current Boeing and Airbus narrow-body jet fleet far exceeds the wide-body fleet across all regions aside from the Middle East. The Gulf region benefits from a highly unique geographic position which enables one-stop connectivity between Europe, Africa, Asia and Australasia. Couple this with the simple fact that Middle Eastern carriers are young and growing fast and it becomes clear to see why wide-body aircraft are the more popular choice within the region. The rest of the world, however, is far more dominated by narrow-body aircraft whereby, in almost all cases, the number of narrow-bodies is far more than double the amount of wide-bodies.

Boeing reports that 25,680 new narrow-body aircraft will be needed over the next two decades[92]. They attribute this to fast-growing low-cost carries and network carriers being pressed to replace their aging fleets, naturally driving narrow-body demand. Europe alone acquired more than 180 new aircraft in 2013, of which 78% were narrow body. This is thought to have been primarily driven by the boom in LCC operation across the Continent in recent times due to carriers like EasyJet and Ryanair continuing to favour single aisle aircraft over twin aisle. Members of the European Low Fares Airline Association (ELFAA) reported a +6.7% increase in passengers when compared to 2012 levels.

[92] Boeing Current Market Outlook 2014-2033

Figure 5.23: Boeing and Airbus civil aircraft fleet by region, 2013



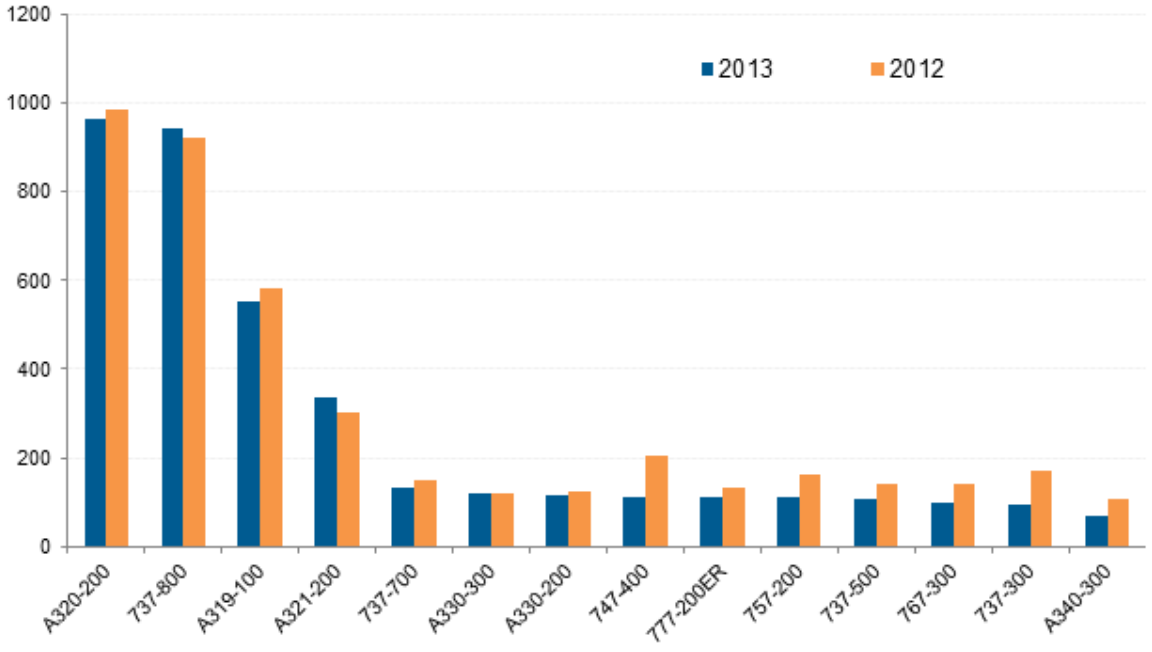
Source: Flightglobal ACAS

5.3.2 The Boeing and Airbus Fleet in Europe

Looking at the composition of the Boeing and Airbus fleets in Europe in 2013, Figure 5.23 showed the aircraft type distribution based in the region. In common with 2012, the top 5 aircraft types are narrow-bodies, reflecting the predominantly short haul nature of air travel in Europe and the extensive networks of the low cost carriers. Accelerated retirements of the Boeing 747-400 means that the most widely used wide-body aircraft in Europe is the Airbus A330-300, operated by virtually all major European network carriers.

The European Boeing and Airbus fleet is 78% comprised of narrow-bodies. Of the top five narrow-body types, Airbus commands 63% of this share. The 737-800 has narrowed the gap to the A320 in terms of fleet size from 62 in 2012 to just 21 in 2013, reflecting increased production rates from the US manufacturer and deliveries to major airlines such as Ryanair and Norwegian.

Figure 5.24: Boeing & Airbus European Operating Fleet by Aircraft Type 2013



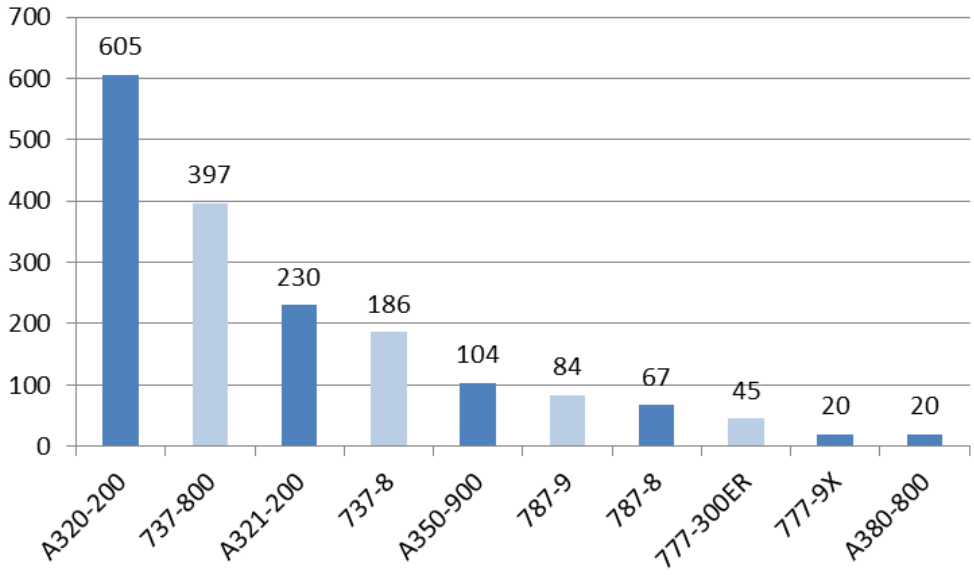
Source: Flightglobal ACAS

5.3.3 Jet Fleet Orders & Deliveries

Figure 5.25 shows the current number of forward orders for Boeing and Airbus aircraft types in Europe. The data shown is for the undelivered backlog of all historical orders up to the end of 2013. The data does not include orders placed in 2014. The Airbus A320 is the largest aircraft type on order at present with the aircraft type being operated by most of the major European network carriers as well as Low Cost Carriers Wizz Air and EasyJet.

The strong initial sales of the A320neo family have had a positive effect on the Airbus order book and it has a narrow advantage over its US rival in terms of forward order market share. Despite the popularity of Boeing and Airbus current production and new technology twin-engine widebodies, narrow-body aircraft comprise approximately 78% of orders to the end of 2013, which is consistent with Boeing's prediction that single-aisle aircraft will predominate to the end of its current forecast period of 2032.

Figure 5.25: Top Boeing & Airbus European Forward Orders by Aircraft Type in 2013



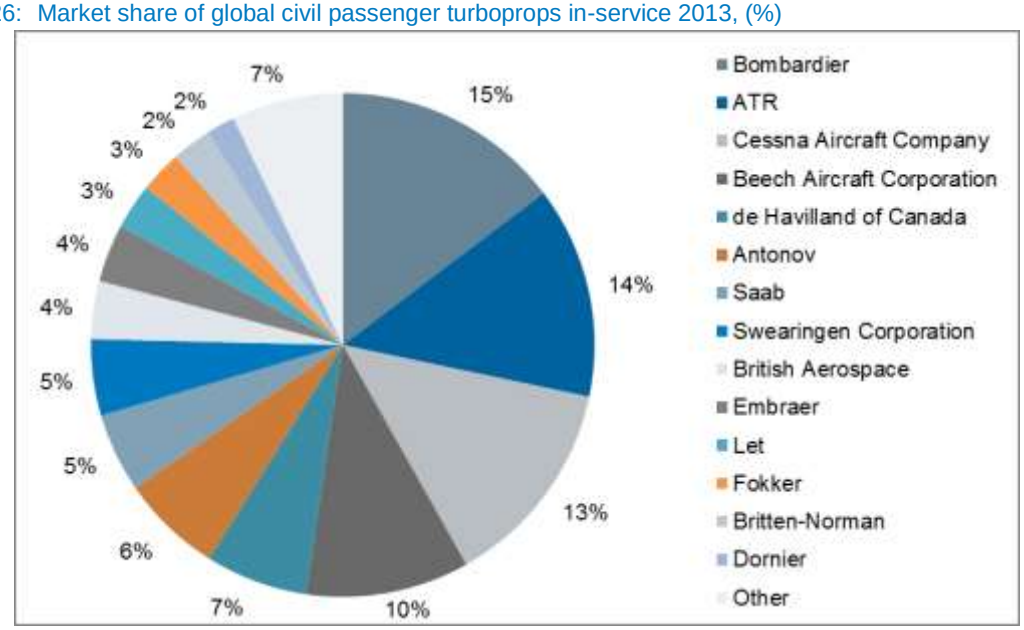
Source: Flightglobal ACAS

5.3.4 Global Civil Passenger Turboprop Fleet

The civil passenger turboprop aircraft market is smaller than the jet market but still significant. As of December 2013, CAPA's Fleets database recorded 6,043 civil passenger turboprop aircraft in service at a global level. Aircraft in this market range from an eight-seat Cessna 208 at one end of the scale to 70+ capacity ATR 72 and Bombardier Q400 aircraft at the other. These aircraft are typically used on short-haul feeder routes where narrow-body capacity is neither cost-effective nor required for operational reasons.

Numerous manufacturers compete in the civil passenger turboprop aircraft market. Figure 5.26 illustrates the market share of the major companies in 2013. The top three manufacturers – Bombardier, ATR and Beechcraft Corp. – command over 50% of the market.

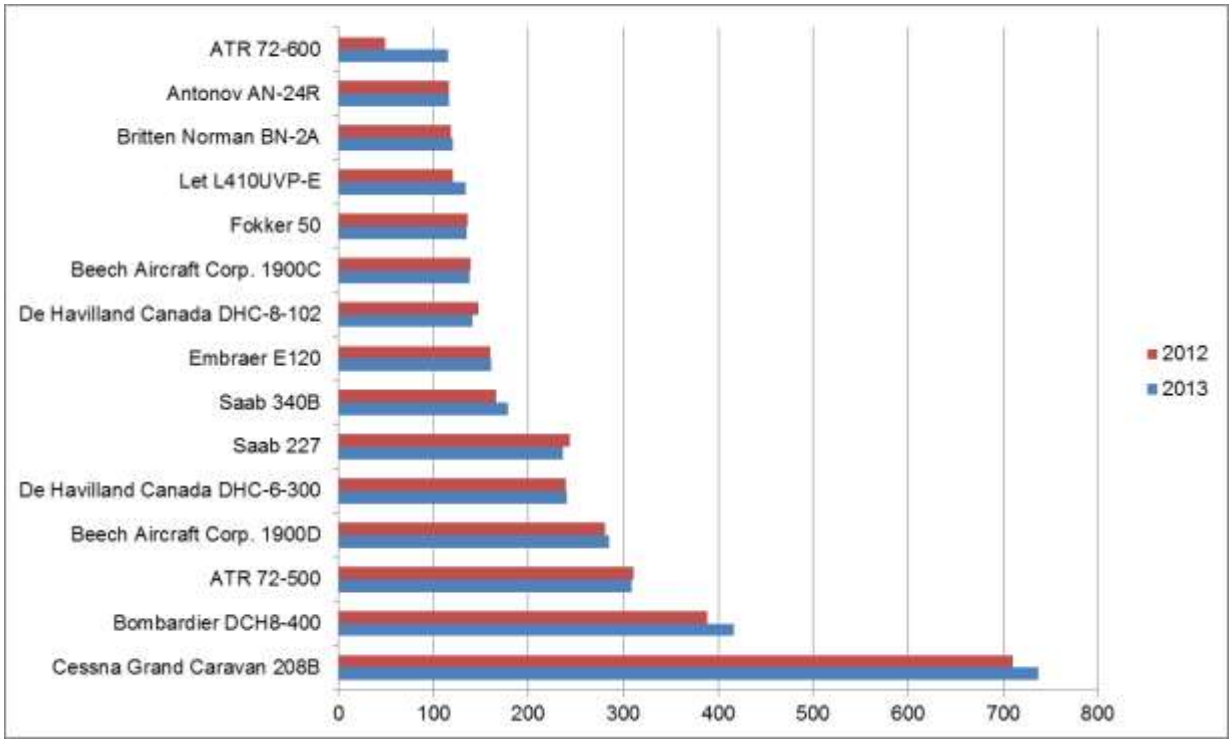
Figure 5.26: Market share of global civil passenger turboprops in-service 2013, (%)



Source: CAPA Fleets database

Figure 5.27, following, represents the world's most popular civil passenger turboprop aircraft by global fleet size at the end of 2012 and 2013.

Figure 5.27: Most popular civil passenger turboprop aircraft by global fleet size in 2013 compared with 2012



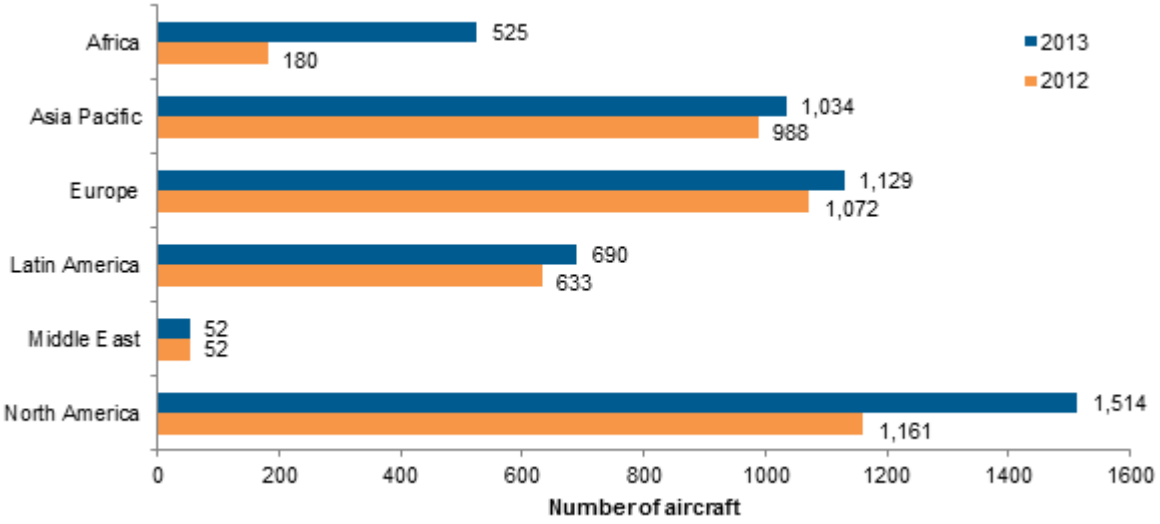
Source: CAPA Fleets Database

Across the General Aviation industry as a whole; Cessna, as a manufacturer, had a comparably disappointing year in terms of actual sales numbers. However, as an aircraft in its own right, Cessna's 208B Grand caravan still remains the world's most popular civil passenger turboprop in terms of fleet size with 737 aircraft in service at the end of 2013 compared with 710 at the end of 2012.

Bombardier's single most successful turboprop is the 78-seat DHC8-Q400, with its sister DHC8-100/200/300 models in the 30-50 seat range also retaining high levels of demand across the world. ATR's best-selling aircraft is the 70-seat ATR 72-500, followed by the smaller ATR 72-600. Beech Aircraft Corporation, the world's fourth largest turboprop manufacturer by market share, is responsible for the 19-seat Beech 1900 commuter aircraft, popular in North America and Africa as well as points around the Pacific Rim.

As was the case in 2012, the global distribution of civil passenger turboprop aircraft in 2013 (Figure 5.28) reveals that airlines in Europe and North America maintain the highest concentrations of these aircraft, followed by Asia Pacific. These North American and European markets are the most mature in terms of structure and have well-defined hub and spoke networks. Mainline operators at busy airports are often fed by regional airlines from regions without sufficient demand for narrow-body aircraft. In the United States in particular, the large legacy operators have branding arrangements with regional turboprop operators allowing them to retain a market presence in areas of low demand. On a much more general scale, there is an everlasting call by the airlines to keep costs to a minimum and hence maintain good operating margins. The rise in fuel costs only enhances the attractiveness of turboprop aircraft which, themselves, are renowned for their fuel efficiency, lower emissions and impressive runway performance. Couple this with the continual advancement in comfort technology and there exists a bright future for the turboprop.

Figure 5.28: Global Civil Passenger Turboprop Fleet by Region in 2013 in comparison to 2012

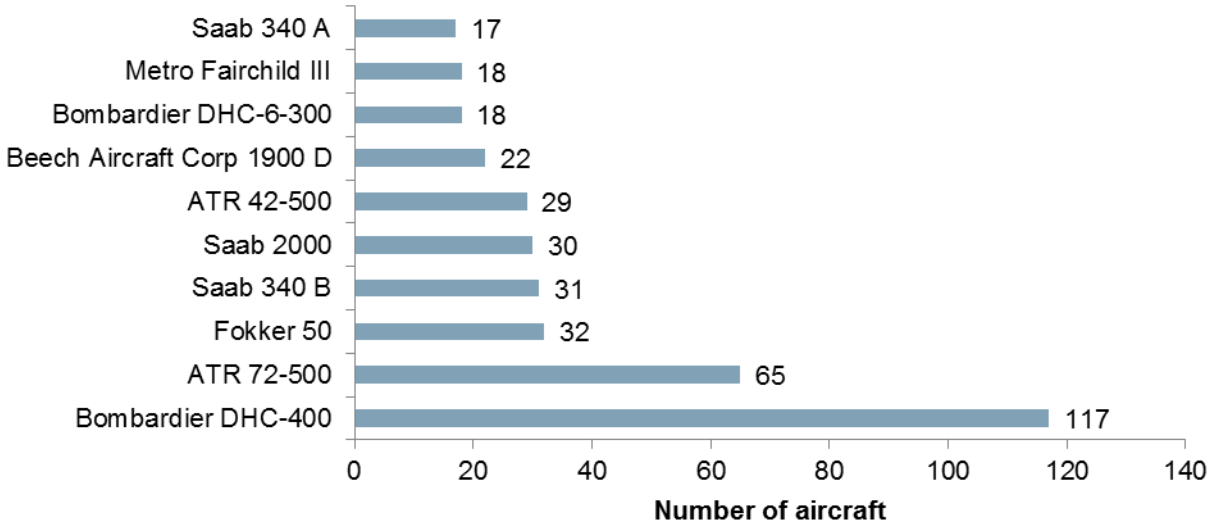


Source: Flightglobal ACAS

According to CAPA's Fleets database, as of the end of 2013, some 877 turboprop aircraft were in service in the 27 countries making up the European Union at the time. Figure 5.29 shows that the larger 70+ seat DHC8-Q400 and ATR 72 are by far the most popular aircraft types in this category in the EU. The ATR72 comes in three main variants – the older 200 series, the popular -500 series and the new production enhanced -600 series offering. ATR's smaller variant, the ATR 42, competes with the Fokker 50 and Saab

340 for market share. It is worth noting that the ATR 42 remains the only one of these smaller aircraft types still in production.

Figure 5.29: Most popular active EU28-registered civil turboprop aircraft in 2013



Source: CAPA Fleets Database

Looking ahead, it is clear the regional jet market as a whole is in the midst of positive change. Once written off by many as destined to disappear, ATR predicts airlines will need 3,400 new turboprops at an average delivery rate of 140 aircraft per year between 2014 and 2023 and 190 aircraft per year between 2024 and 2033. The rapidly developing Asia-Pacific turboprop market is predicted to overtake both Europe and North America in geographical market share as the region's carriers slowly begin to move towards hub style operations and thus require a broader range of aircraft to make up their fleet. Worldwide, the turboprop market is expected to almost match regional jets' market share by the end of 2033. As of September 2014, 15% of the regional turboprop market is turboprop aircraft alone but within two decades, this figure is projected to rise to 45%[93].

5.3.5 Focus on Global Business Aviation Manufacturers

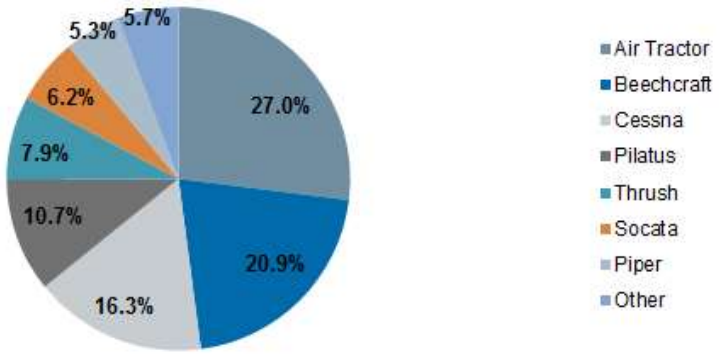
The Business Aviation industry's recovery is continuing to be stifled by the fragile state of the world's largest economies, coupled with political volatility in global hot spots.

Business aviation is the aviation industry's paradox. Traffic drivers such as GDP and oil prices, triggering the air traffic demand profile, are still creating uncertainty in the commercial air traffic market in some regions. However, the increase of aircraft shipments, especially turbine aircrafts, and the increase of the United States aircraft demand does not align with the air traffic trend. Billings of aircraft shipments have almost reached levels before the economic crisis (22.9bn in 2013 vs 23.8bn in 2008) though aircraft shipments have not (1,323 in 2013 vs. 1,851 in 2008), showing a higher amount spent per aircraft even despite the unstable financial situation.

[93] ATR, Regional Turboprop Market Outlook 2014-2033

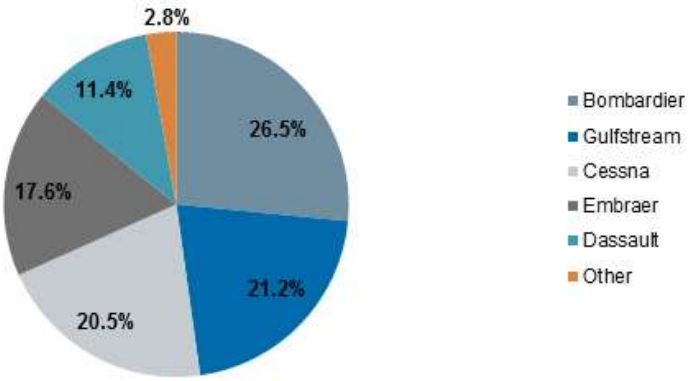
General Aviation Manufacturers Association (GAMA) presents the 2013 General Aviation Statistical Databook & 2014 Industry Outlook. According to the annual report General aviation grew +4.25% to 2012, where out of the 2,256 airplane shipments, 933 were piston engine aircraft and 1,323 were turbine aircraft.

Figure 5.30: Turboprop manufacturer shipment share 2013



Source: GAMA

Figure 5.31: Business Jet manufacturer shipment share 2013



Source: GAMA

Figure 5.30 and Figure 5.31 show market shares for global shipments of business jet and turboprop aircraft. Beechcraft (previously Hawker Beechcraft) is back on the top of the turboprop shipments after three years in the shadow of Cessna, which did not lose as large amount of shipments through the recession period. The most sold Beechcraft is the twin-engine King Air 350, which supposed over 50% of the sales. However, the Cessna Grand Caravan was and is still the most demanded one (94 shipments).

Air Tractor was though the most sold turboprop, nevertheless the aircraft is not meant for business aviation but rather for agricultural, firefighting and utility purposes.

In the census period, North America and especially in USA, the largest business aviation region with over 209,000 based aircrafts has shown recovery in all type of aircrafts, as total shipments and shipment percentage share have increased versus 2012. Europe's business aircraft deliveries share has dropped significantly since 2007, both in Turboprop (-6% change) and Business Jet (-10% change) in benefit to

other developing regions as Asia Pacific and Middle East & Africa, both almost doubling their shipment share.

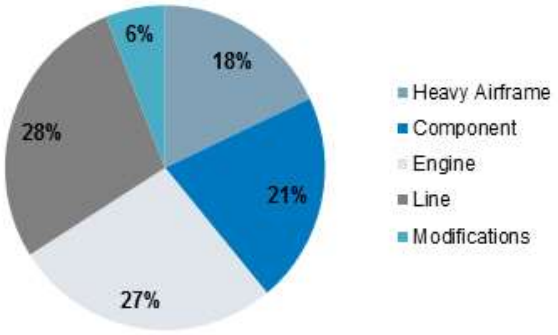
5.4 Maintenance, Repair & Overhaul (MRO)

The acronym MRO describes any maintenance or engineering function in the aviation industry involving the airframe, engines, landing gear, auxiliary power units (APUs), avionics, thrust reversers, fuel systems, electrical systems, hydraulics and other components of an aircraft. Maintenance can be scheduled in accordance with regulatory requirements and also in response to various defects as they arise.

5.4.1 Global MRO Activity

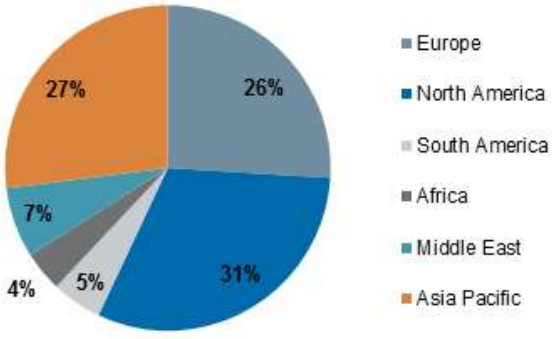
Commercial aircraft make up the vast majority (46%) of the MRO industry as a whole and at the end of 2013, the global value of civil air transport MRO spend was USD 60.7 billion – up 5.5% from the USD 46.9 billion achieved in 2012. The industry supports 123,000 aircraft flying just under 100M hours annually with the greatest proportion of MRO activity due to line maintenance (28%)[94].

Figure 5.32: Global MRO Activity by Category 2013



Source: ICF SH&E

Figure 5.33: Global MRO Market Share 2013



Source: ICF SH&E

At the end of 2013, the Asia-Pacific region overtook Europe and claimed the second largest share in global MRO activity. This reflects the rapid growth experienced in the region in recent months – the Asia-Pacific fleet is predicted to grow by 3,500 aircraft by 2023, rendering it larger than both North America and Europe, and is set to nearly triple just a decade later[95]. The main driver behind this development is the sharp increase in aircraft numbers throughout Asia-Pacific in both recent times and in the years to come. The continued eastward shift of aviation critical mass in conjunction with strongly growing economies and liberalisation in trade act as further drivers behind the region's growth in MRO activity.

The doubling of aircraft numbers over the next decade within the Asia-Pacific region will spark a doubling of Asia's MRO market. This means that, by 2024, the region will have taken over the Americas to become the largest MRO market. The emergence of efficient MRO and integrated service providers in Asia combined with lower labour costs means that outsourcing work will outpace organic growth in the region. China and India are expected to drive the increase in Asia's MRO market with the Chinese market

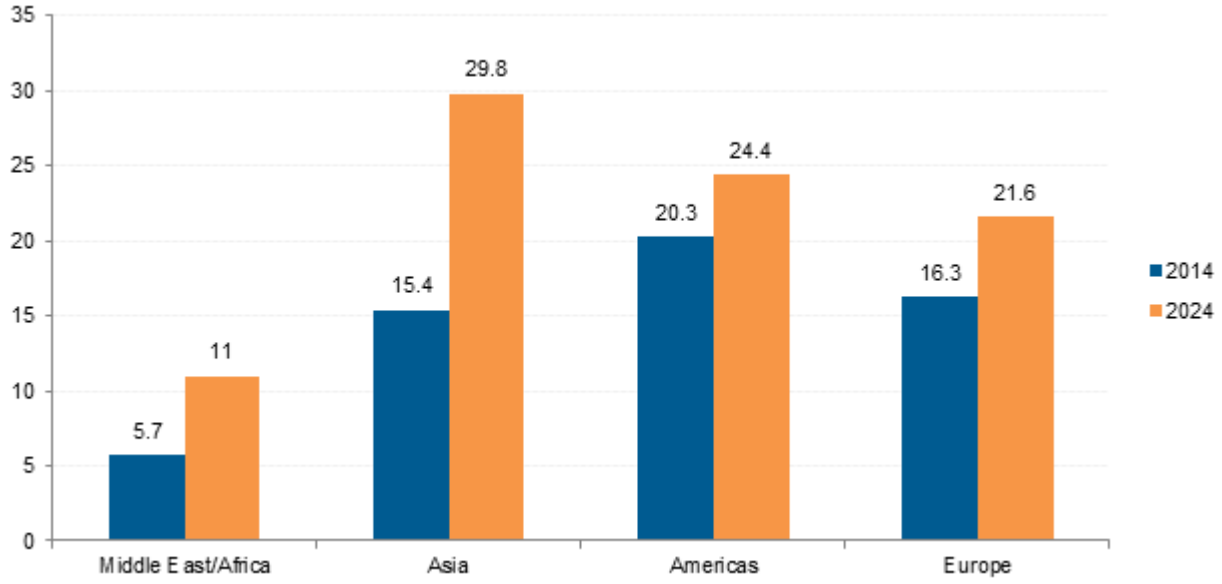
[94] ICF International, Global MRO Outlook – May 2014

[95] ICF International, MRO Industry in Asia Pacific – March 2014

expected to grow to 2.5 times the size it is today at 9.8% CAGR. India, despite only having a 1-3% share of the total market, will grow at over 10% per year over the forecast period.

Fleet replacement on a large scale in North America alongside Asia's rapid transformation into a mature market will naturally slow down MRO growth in this region meaning both Latin and Central America will be the main drivers behind the growth in the overall MRO market (Americas) from USD 20.3 billion to USD 24.4 billion. The Middle Eastern market is predicted to rapidly increase by 2024 whilst Europe's growth is likely to be slow but steady (CAGR 2.9%)[96].

Figure 5.34: MRO regional market share, 2014-2024 (USD, billion)



Source: TeamSAI

Of course, whilst an increase in global fleet numbers is albeit a good sign for the civil aircraft industry as a whole, the constant need to keep operating costs to a minimum means carriers naturally want to keep MRO costs to as little as is operationally possible as well. The same challenges facing operators are being passed on to MROs as the former look to reduce their cost basis in the face of increased fuel costs, which now sit at approximately 35% of operator spend[97] and as a result, operators are demanding more fuel efficient aircraft. Smaller, more efficient jets are likely to prove more popular over the coming years than larger, wide-bodied jets making up over 60% of the world's fleet by the year 2024[98] which in turn translates into 48% of global MRO activity.

Boeing and Airbus aircraft drive almost 90% of the MRO market – the A320 (CEO & NEO) and 737 (NG & MAX) are expected to achieve the largest share of the MRO market over the next two decades[99]. The next major players, Bombardier and Embraer, are both expected to lose MRO market share over the next

[96] TeamSAI, 2014-2024 Global MRO Forecast

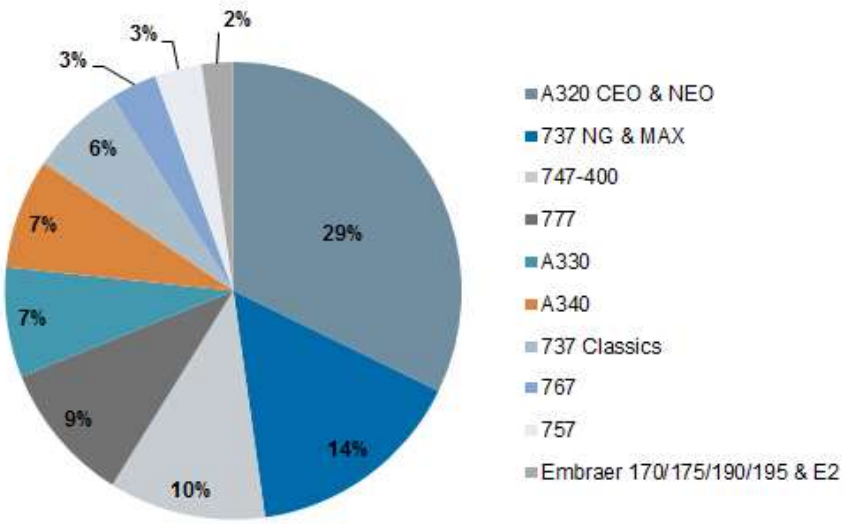
[97] Facts and Figures, Air Transport Action Group, March 2012

[98] TeamSAI Consulting Services analysis

[99] TeamSAI, 2014-2024 Global MRO Forecast

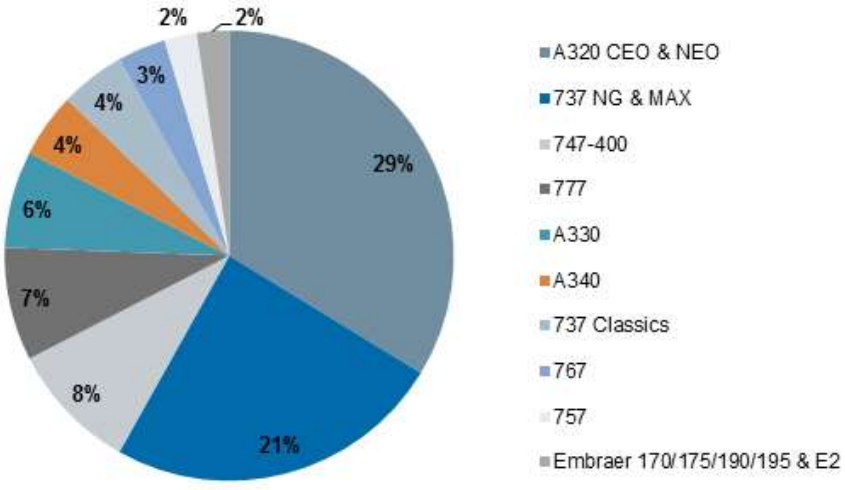
decade[100]. A small percentage of this loss can be attributed to new entrants in the regional jet marketplace but the main concern for the Canadian and Brazilian manufacturers will be operators' tendency to operate narrow-bodies as the industry reaches further into the millennium. Within the regional jet market, however, Embraer are expected to rise to the top ranking for global MRO – climbing at 0.9% CAGR through to 2024. Bombardier's equivalent could fall by more than 50% as its existing aircraft's market potential declines over the next ten years.

Figure 5.35: Europe's top 10 leading aircraft families in terms of MRO spend, 2014



Source: TeamSAI

Figure 5.36: Europe's top 10 leading aircraft families in terms of MRO spend, 2024



Source: TeamSAI

[100] Aeronautical Repair Station Association, Global MRO Market Economic Assessment, January 2014

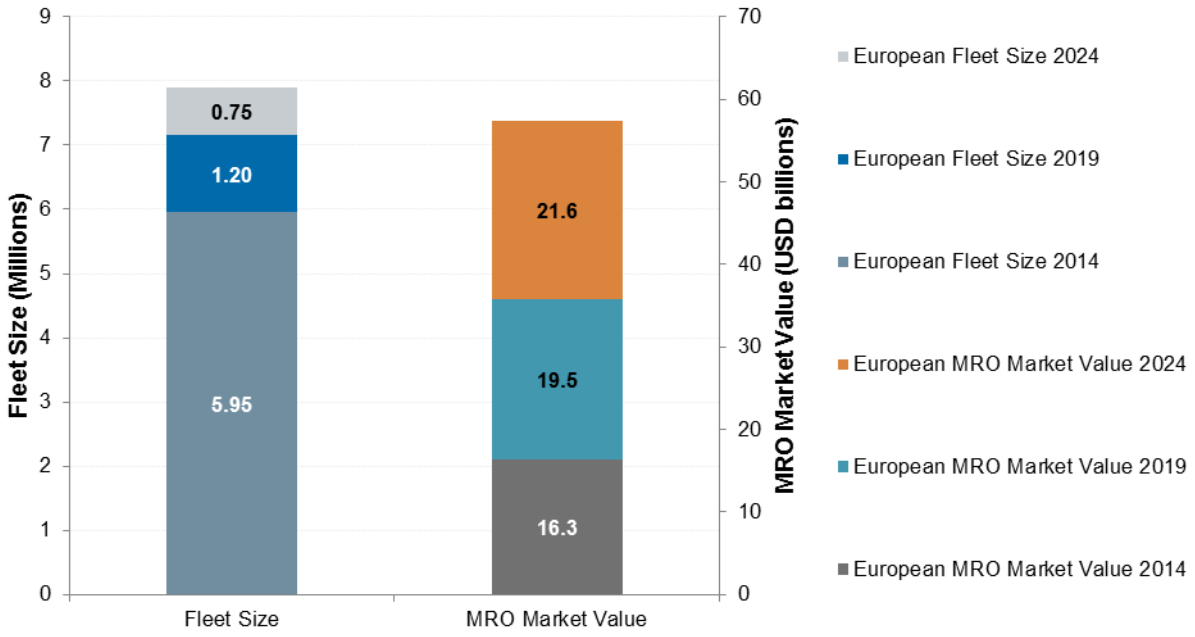
5.4.2 MRO Activity in Europe

Team SAI predict a slow but nevertheless steady growth in the size of the European MRO market up until 2024. CAGR will be 2.9% for the ten years following 2014 and market value will grow from USD 16 billion to USD 22 billion (Figure 5.37).

Figure 5.37: 2014-2024 European MRO Forecast (USD billion)

Source: TeamSAI

Figure 5.38: European Current & Forecast MRO & Aircraft Fleet 2014-2024



Source: TeamSAI

As a whole, Europe is expected to see solid growth between 2014 and 2024 but Western Europe is predicted to lose some of its market share in MRO despite adding USD 12 billion to the global figure. The Aeronautical Repair Station Association predicts both Western Europe and North America to be among the top three leading MRO regions in the world, but the rate in which they both grow will be among the lowest.

At present, 60% of wide-body heavy maintenance is being sent to Asia Pacific and China from North America not least because of the vast difference in labour rates between the two regions. The average labour rate for Western Europe currently stands at USD 80, the highest in the world, closely followed by North America at USD 54. China and Asia-Pacific, however, both have an average rate USD 44[101].

On the contrary, Eastern Europe will find itself achieving one of the highest MRO growth rates until 2024 at +6.2%[102]. Unlike other regions, Eastern Europe continues to operate large numbers of older more maintenance-intensive aircraft, such as the 737 Classic, and this is seen as a key driver of the region's increasing MRO spend.

[101] Flightglobal

[102] Aeronautical Repair Station Association, Global MRO Market Economic Assessment, January 2014

6 Air Traffic Management

6.1 Introduction

Air Navigation Service (ANS) performance targets are set under the Single European Sky Performance which is organised in Reference Periods. The first Reference Period (RP1) runs for three years from 2012 to 2014, while RP2 will run for 5 years from 2015 to 2019. 2012 was the first year that all SES States/Air Navigation Service Providers (ANSPs) moved away from the full recovery charging mechanism and adopted the "determined costs" method with specific risk-sharing arrangements aimed at incentivising ANSPs' economic performance. In the context of traffic in 2013 (measured in Service Units – SUs) 5.6% lower than planned in the National Performance Plans (NPPs), costs were 5.4% lower, so the EU-wide actual real en-route unit cost per service unit in 2013 was €56.85, just 0.3% higher than the forecast adopted in the NPPs.

In terms of safety, the number of ANS related accidents has remained low and stable over the ten-year period, while the number of accidents with an ANS contribution has decreased. In 2011 and 2012 there were no accidents with an ANS contribution. However, in other areas, such as the effectiveness of safety management and adoption of a standardised severity classification scheme, much progress still needs to be made.

Although all Member States remain committed to the SES, implementation (particularly in terms of the development of Functional Airspace Blocks) still falls well below the original expectations. Consequently in June 2013, the Commission proposed updates to the four regulations creating the SES and also amendments to the rules governing the European Aviation Safety Agency (EASA). These proposals are known as SES2+ and provide a framework for a more performance based approach to delivering the objectives of the Single European Sky, particularly with reference to implementing Functional Airspace Blocks (FABs) and reinforcing the role of the Network Manager.

In terms of technical developments, in May 2013, the European Commission adopted Implementing Regulation (EU) 409/2013 that defines an EU framework that will activate the SESAR deployment process closing the loop of the project's definition-development-deployment life cycle in order to allow SESAR to fully deliver its benefits from concept to implementation.

6.2 ATM Performance

6.1.1 Introduction

ANS performance targets are set under the Single European Sky Performance Scheme at both EU-wide and National/Functional Airspace Block (FAB) level. The Performance Scheme is organised in Reference Periods (RPs) and the first reference period runs for three years from 2012 to 2014. RP2 will run for 5 years from 2015 to 2019. The Performance Review Commission of EUROCONTROL has been designated as the Performance Review Body (PRB) responsible for providing advice on target setting and for monitoring performance.

Table 6.1 presents the Key Performance Areas (KPAs) and Performance Indicators (PIs) applicable for RP1 (2012-14) as set out in Regulation 691/2010[103].

Table 6.1: KPAs and PIs in RP1

KPA	ANS Performance INdicator	RP1
Safety	Effectiveness of Safety Management (EoSM)	Reporting
	Application of severity classification scheme (RAT methodology)	Reporting
	Application of Just Culture (JC)	Reporting
	Separation Infringements	Reporting
	Runway Incursions	Reporting
	ATM specific occurrences at ATS units	Reporting
Environmental	Horizontal flight efficiency of last filed flight plan (KEP)	Union-wide target
	Effectiveness of booking procedures for FUA	Reporting
	Utilisation of Conditional Routes	Reporting
Capacity	En-route ATFM delay per flight	Union-wide target Nat/FAB targets
	Arrival ATFM delay	Reporting
	Additional time in taxi-out phase	Reporting
	Additional time in arriving sequencing and metering area (ASMA)	Reporting
Cost Efficiency	Determined Unit Rate (DUR) for en-route ANS	Union-wide target Nat/FAB targets
	Terminal costs	Reporting
	Terminal unit rate	Reporting

Source: EUROCONTROL PRB

Performance monitoring data for a particular year is normally only available towards the end of the following year. For this reason, the 2013 edition of Annual Analyses only covers 2012 actual data. The results are taken from the PRB Annual Monitoring Report 2012[104] published in October 2013. Forward looking indications for the remainder of RP1 and RP2 are taken from a second PRB report on RP2 target setting[105] published in September 2013. Latest results can be obtained from the e-Dashboard published on the EUROCONTROL website[106].

This chapter on Annual Analyses concentrates on two of the four KPAs: ATM Cost Efficiency and ATM Safety. The other two KPAs covering ATM Environmental and Capacity/Delays are touched upon in their respective chapters.

[103] 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 laying down common requirements for the provision of air navigation services, 29 July 2010

[104] PRB Annual Monitoring Report 2012 Volume 1, PRB, Edition 2.0, 11 October 2013

[105] PRB advice to the Commission in the setting of Union-wide performance targets for RP2, Final Report, Edition date 27 September 2013

[106] http://www.eurocontrol.int/prudata/dashboard/eur_view_2013.html

6.2.1 Cost Efficiency

Under the cost efficiency KPA, EU-wide targets are set for the average determined unit rate for en route ANS in 2012, 2013 and 2014. The aggregation of the individual national cost-efficiency targets for RP1 provides for a slightly lower figure for 2012 and higher figures for 2013 and 2014 (Table 6.2). 2012 was the first year that all SES States/ANSPs moved away from the full recovery charging mechanism and adopted the "determined costs" method with specific risk-sharing arrangements aimed at incentivising ANSPs' economic performance. In the context of traffic in 2013 (measured in Service Units – SUs) 5.6% lower than planned in the National Performance Plans (NPPs), costs were 5.4% lower, so the EU-wide actual real en-route unit cost per service unit in 2013 was €56.85, just 0.3% higher than the forecast adopted in the NPPs.

Table 6.2: En route cost efficiency 2012 actual and RP1 targets (€2009)

SES States	2012	2013	2014
Targets (Data from National Performance Plans)	57.75	56.69	54.85
Latest Actuals (June 2013 Reporting Tables)	58.47	56.85	

Source: PRB Annual Monitoring Report 2013

The out-turn in this metric is impacted by both traffic volumes and unit costs. Although costs were lower by -3.3% than forecast 2012, traffic volumes were depressed further than expected by -4.5%, the net result being cost efficiency was 1.2% higher than forecast. For RP2, the European Commission in March 2014 set targets slightly lower than those proposed by the PRB. These targets will lead to an average reduction of -3.3% per annum over the period 2015 to 2019 (Table 6.3).

Table 6.3: En route cost efficiency RP2 targets (€2009)

	2015	2016	2017	2018	2019
PRB Proposed Targets	56.64	54.95	52.98	51.00	49.10

Source: PRB

Under the cost efficiency KPA, terminal ANS costs and unit rates for RP1 are to be monitored. EU-wide terminal ANS costs in 2012 were -5.6% lower than forecast in the adopted NPPs. This was driven by large savings achieved in the UK, France, Spain and Italy. A further 16 States achieved smaller savings and terminal ANS costs were higher than expected in 8 States.

6.2.2 ATM Safety

ANS-related Accidents and Serious Incidents

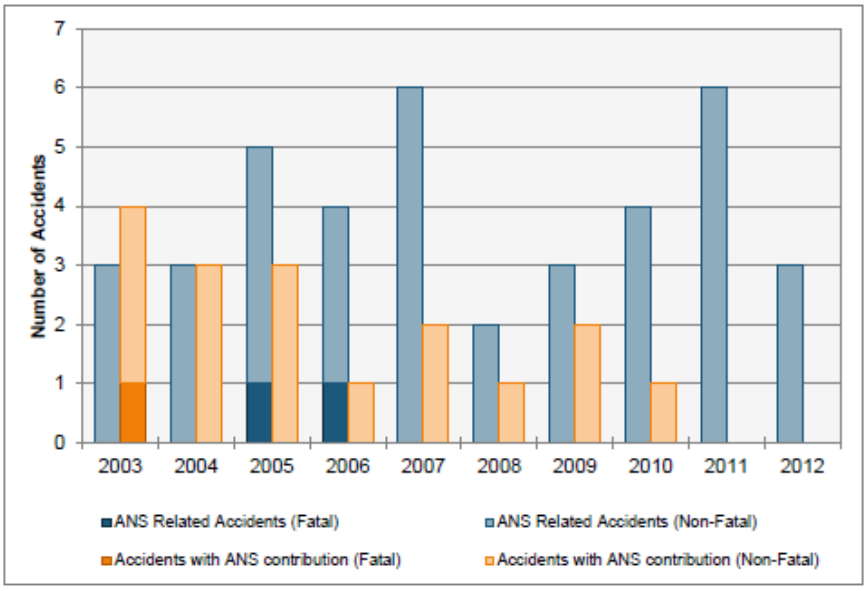
Figure 6.1 shows the number of accidents involving commercial air transport (CAT) aircraft above 2,250 kg maximum take-off weight (MTOW). These are categorised as fatal and nonfatal accidents, and whether the accident:

- Has an "ANS contribution" (i.e. at least one ANS factor was in the causal chain of events leading to an occurrence, or at least one ANS factor potentially increased the level of risk, or it played a role in the occurrence encountered by the aircraft).
- Was "ANS related" (i.e. the ANS system may not have contributed to a given occurrence, but it may have a role in preventing similar occurrences in the future).

The number of ANS related accidents has remained low and stable over the ten-year period, while the number of accidents with an ANS contribution has decreased. In 2011 and 2012 there were no accidents with an ANS contribution.

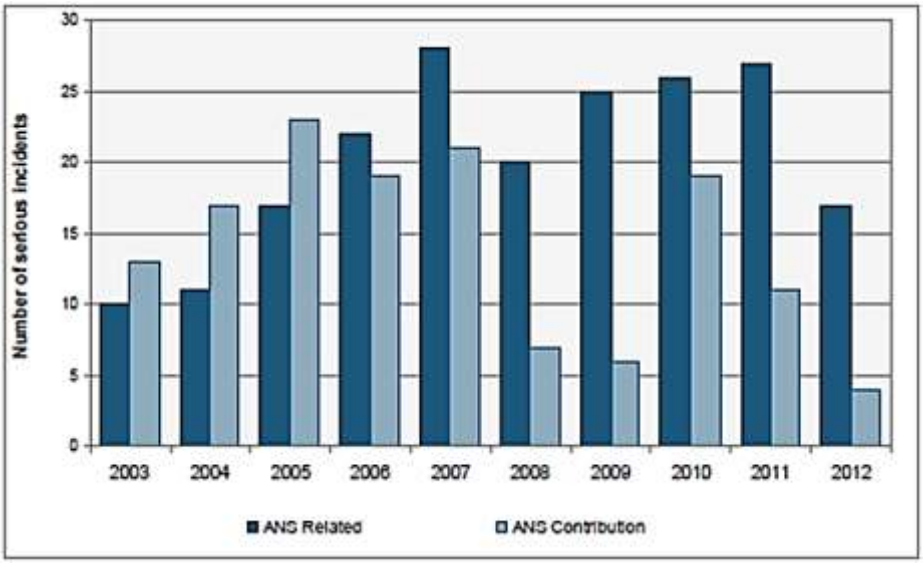
The number of serious incidents per year is shown in Figure 6.2 CAT aircraft with a MTOW above 2,250kg were involved in 343 serious incidents between 2003 and 2012. There is no visible trend in either the ANS-related or ANS-contribution categories.

Figure 6.1: ANS fatal and non-fatal accidents



Source: PRB Monitoring Report 2012 based on EASA data

Figure 6.2: ANS serious incidents



Source: PRB Monitoring Report 2012 based on EASA data

Effectiveness of Safety Management (EoSM)

For 2012, all 29 Member States and 37 ANSPs filled in questionnaires used for the measurement of the EoSM in accordance with the Acceptable Means of Compliance (AMC) and Guidance Material (GM) for the Implementation and Measurement of Safety Performance Indicators (EASA Decision 2011/017/R).

The scores resulting from the computation by EASA of the replies from States ranged from a minimum of 29 to a high of 85 with 41% of the States scoring below 50. The average effectiveness score achieved by the individual ANSPs ranged from 42 to 89 with only 8% ANSPs scoring below 50.

A Maturity Level is assigned to each Management Objective (MO) and is defined to be the lowest response (A – E, equivalent to Levels 1 - 5) in each MO. The five possible responses are:

- A-initiating (the lowest level);
- B-planning/initial implementation ;
- C-implementing;
- D-managing and measuring, and;
- E-continuous improvement (the highest level).

The EoSM scores achieved per individual State show that 41% of States are scoring below 50. The PRB considers this to be very low. The verified results of the EoSM questionnaires at State level clearly show that implementation of safety management principles level is below implementation levels of ANSPs. This raises concerns as to how States perform both their oversight and safety management tasks and responsibilities.

By the end of RP1 (2014), the expected baseline is that most, but not all, National Supervisory Authorities (NSAs) will have achieved at least EoSM Level C in all MOs. For RP2, the target is that all NSAs will have achieved at least Level C in all MOs.

Application of Severity Classification Scheme (RAT Methodology)

States are required to report the proportion of Separation Minima Infringements (SMIs), Runway Incursions (RIs) and ATM-Specific Events for which the severity of the occurrence is assessed using the severity classification, based on the RAT methodology.

The EU averages for application of Risk Analysis Tool (RAT) severity methodology show that after the first year of reporting for RP1 less than a third of Member States applied the methodology for SMIs and RIs, and less than half for ATM-Specific events. Many CAA/NSA entities have indicated that they lack either sufficient information to complete the RAT Overall score, or the knowledge/capability to enable such scoring and reporting; or that they lack both elements. In their report, the PRB encourages Member States to continue additional efforts to enable further enhancements in reporting and application of RAT methodology by seeking, planning and applying training on this matter and for pooling resources with their FAB partners.

By the end of RP1, it is expected that all ANSPs but not NSAs/States will be reporting on ATM-specific occurrence using the RAT methodology. For RP2, the target is that all NSAs/States will also be reporting using the RAT methodology.

6.3 Single European Sky

6.3.1 SES 2+

The Single European Sky (SES) is a flagship European initiative to reform the architecture of European air traffic control, to meet future capacity and safety needs. Building on initiatives in the late 1990s, the Single Sky I (SES I) package was adopted in 2004 and the Single Sky II Package (SES II) was adopted in 2009. The core idea of the SES is to shift the design of air traffic management from national level to the EU level to benefit from efficiencies of scale and overcoming the administrative and technical barriers created by the legacy of national approaches. This calls for intervention at the EU level.

Although all Member States remain committed to the SES, implementation still falls well below the original expectations. Consequently in June 2013, the Commission proposed updates[107] to the four regulations creating the SES and also amendments to the rules governing the European Aviation Safety Agency (EASA)[108]. Key elements of the proposals[109], known as SES2+, are shown below.

Safety and Oversight

The National Supervisory Authorities (NSAs) were created in 2004 to oversee the safety and performance of air traffic control organisations as well as to ensure that they implement the commonly agreed rules. To ensure independence of these authorities SES2+ has been strengthened to provide:

- full institutional separation of the NSAs from the entities that they oversee to ensure true management independence;
- a stable funding channel to ensure financial independence; and
- co-operation, training and networking of authorities as well as exchanges of experts at EU-level to ensure that they have the necessary skills and means to do their work efficiently.

Performance Targets

The reform of Europe's air traffic management system is driven by four key performance targets: safety, cost-efficiency, capacity, and environment. SES2+ will strengthen the performance scheme by providing:

- A shorter target setting process based on up to date data and more accurate short term forecasts;
- Tailored targets that can be aimed at functional airspace blocks, national level, individual service provider or even individual airports, depending where improvements are needed the most.

[107] Proposal for a Regulation of the European Parliament and of the Council on the Implementation of the Single European Sky, COM(2013) 410 final, 11 June 2013

[108] Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EC) No 216/2008 in the field of Aerodromes, Air Traffic Management and Air Navigation Services, COM(2013) 409 final, 11 June 2013

[109] European Commission Memo/13/525 , 11 June 2013

Support Services

Support services (meteorological, communication, navigation, surveillance and aeronautical information services) are currently the biggest cost driver in air traffic management. The Commission is proposing the separation of support services, which could then be subject to competitive tender, under normal public procurement rules ensuring transparency of the selection process and focus on quality and cost instead of nationality. The ownership and structure of the support service providers will be left open to choice. Conservative estimates indicate that 20% savings can be expected from the introduction of normal public procurement rules. Apart from improving efficiency this also opens the door for new entrants to the market and encourages investment and innovation in new products.

Customer Focus

SES2+ seeks to introduce a stronger customer focus by introducing some industry best practices into the legislation with regards to consultation as well as a possibility for the various airspace user groups to sign off investment plans of the providers.

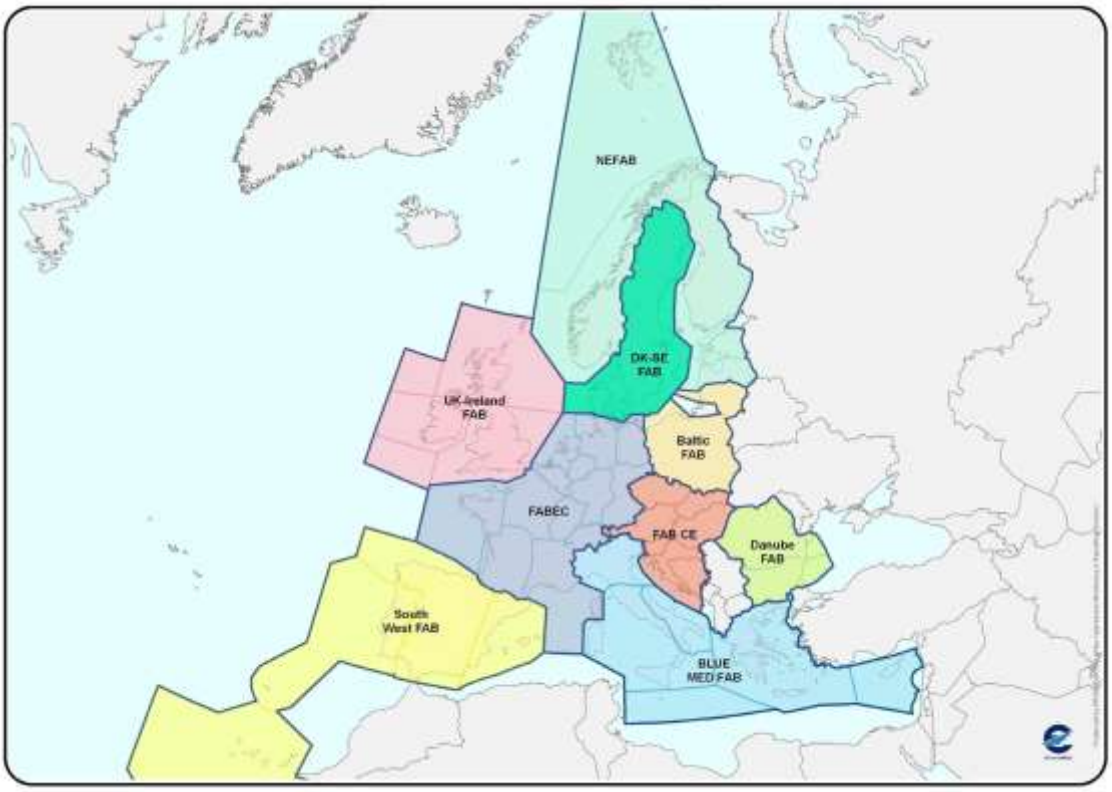
Functional Airspace Blocks (FABs)

Functional Airspace Blocks (FABs) are intended to replace the current patchwork of 27 national air traffic blocks with a network of larger, regional blocks to gain efficiency, cut costs and reduce emissions. The nine FABs are shown in Figure 6.3.

Traditionally the Functional Airspace Blocks (FABs) were a rather prescriptive form of cooperation between Member States and service providers, aiming for larger service provision entities. However one size does not fit all and often the FABs have become exercises in administrative box ticking rather than developing synergies and economies of scale that would start to lead to real reductions in the cost of provision.

With SES2+ the FABs will be turned into more flexible industry partnerships, which also allow participation in more than one FAB as long as they provide the necessary performance improvements. This will ensure that the real focus of FABs is performance and that they are used as bottom-up business tools instead of simply being political constructions.

Figure 6.3: Functional Airspace Blocks



Source: European Commission/EUROCONTROL

Network Manager

Under the SES legislation, EUROCONTROL has been designated as the network manager and this role is enhanced in SES2+, focusing on network level synergies and industrial cooperation. New services are proposed such as information networks, monitoring of technical systems and airspace design. The services could be either provided centrally or outsourced by the Network Manager.

EASA

The European Aviation Safety Agency (EASA) has been in existence since 2002. In 2009, EASA's responsibilities expanded to cover in addition safety aspects relating to ATM and aerodromes. The 2009 extension to ATM created duplication in some tasks which were covered by both SES legislation and the EASA basic regulation. This was deliberate to avoid a possible gap in the regulatory framework during the transition phase. While in other areas, such as air crew licensing or airworthiness, EASA ensures the drafting of all technical rules, the overlap in ATM arose because a distinction was made between "safety" and "non-safety" rules, which were variously covered by EASA, SES and EUROCONTROL.

The Commission proposes, in this legislative package, to eradicate the overlap between SES and EASA regulations and share work between the different institutions accordingly. The Commission will focus on the key questions of economic regulation, whilst EASA, renamed the European Union Agency for Aviation (EAA), will ensure co-ordinated drafting and oversight of all technical rules, drawing on expertise from

EURCOCONTROL, Member States, and industry stakeholders. EUROCONTROL will increasingly focus on operational activities.

6.3.2 SESAR

The SESAR project is the European air traffic control infrastructure modernisation programme. Following the extensive project definition and development phases, 2013 saw the start of the transition to deployment within the context of the European ATM master plan.

Deployment Phase

On 5 May 2013, the European Commission adopted Implementing Regulation (EU) 409/2013[110] that defines an EU framework that will activate the SESAR deployment process closing the loop of the SESAR definition-development-deployment lifecycle in order to fully allow delivery of its benefits from concept to implementation.

This Regulation defines four main instruments to support SESAR deployment:

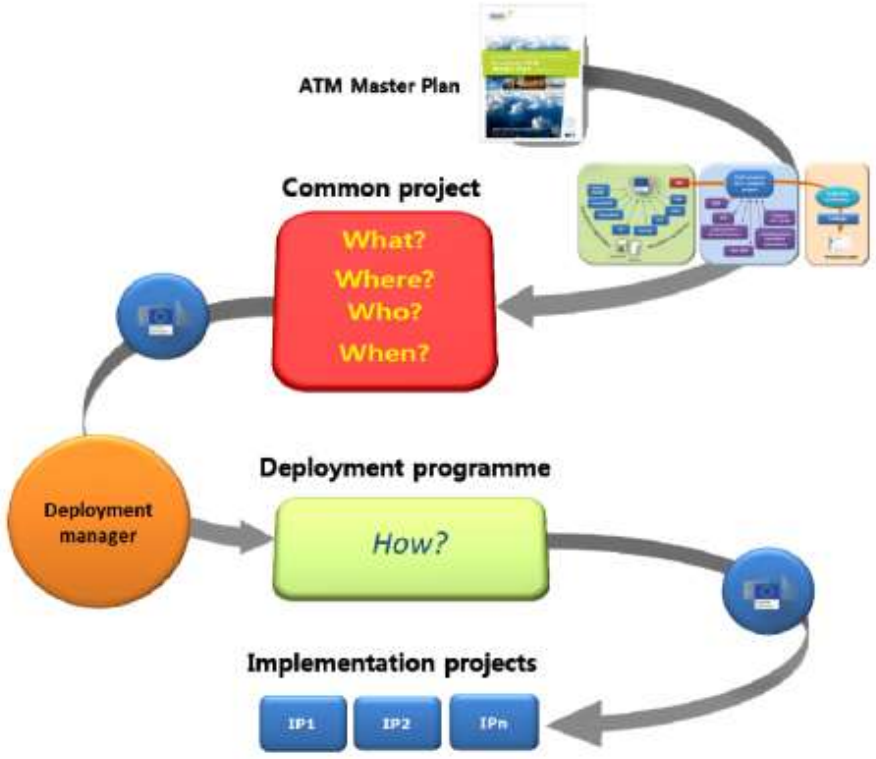
1. Common projects that will define what needs to be deployed to achieve the maximum benefits, where, by who and when. The projects aim to deploy ATM functionalities that are considered essential to the improvement of ATM performance. For this purpose, they group those essential ATM functionalities defined in the ATM Master Plan that:
   - are mature for implementation;
   - demonstrate to have a positive global business case for the European ATM network, and;
   - require a synchronised deployment.
2. The deployment programme, which translates the common projects into detailed deployment activities (implementation projects) that define how common projects should be implemented.
3. Governance mechanisms that ensure a timely, synchronised and coordinated deployment of the SESAR concept of operations and that involves all stakeholders and the relevant EU and Single Sky bodies.
4. Targeted incentives, such as grants, loans, modulation of route charges, to support the co-ordination and the implementation of common projects.

The first tasks addressed by the Policy level are the development of the first common project, referred to as the "pilot common project" or PCP, and the setup of the deployment manager. The work on both tasks is running in parallel, however, the intention is to first adopt the PCP, which will serve as a concrete basis on which the relevant operational stakeholders can setup the partnership underlying the deployment manager and develop the deployment programme to implement the PCP.

The PCP will select the essential ATM functionalities in the ATM Master Plan that, having completed their research, development and validation cycle through the work of the SESAR Joint Undertaking, have demonstrated their readiness for deployment and to produce benefits if deployed in synchronisation.

[110] Commission Implementing Regulation (EU) No 409/2013 on the definition of common projects, the establishment of governance and the identification of incentives supporting the implementation of the European ATM Master Plan, 3rd May 2013

Figure 6.4: SESAR deployment to deliver the European ATM master plan



Source: SESAR

In accordance with Reg. (EU) 409/2013, the adoption of the PCP follows three steps:

- Setting the content;
- Stakeholder consultation and endorsement;
- Institutional consultation and adoption.

The formal adoption of the PCP is expected in 2014 following a targeted stakeholder consultation which commenced in December 2013.

Validation of Technical Developments

As a performance-based R&D programme, SESAR systematically validates the work of its technological and operational projects. The mechanism used to validate these solutions is known as the Release Process; this process involves solutions undergoing thorough pre-industrial development and integration testing within a given timeframe in order to establish their readiness for industrialisation and subsequent deployment. Releases 1 and 2 in 2011 and 2012 comprised some 55 validation exercises. Release 3 in 2013 comprises 19 exercises closely aligned to and across all six key features that define the operational improvements and enablers required to meet the SES strategic performance objectives.

The contribution that the exercises in Release 3 will deliver to each key feature is mapped below:

Traffic synchronisation:

- Streaming techniques including Point Merge procedures in the frame of an extended horizon of the arrival manager in a multi-airport Terminal Manoeuvring Area (TMA).

Airport integration and throughput

- Detection of runway incursions and infringements of restricted areas by aircraft and vehicles, provision of alerts to ATC controllers and vehicle drivers
- Linking the Airport Operations Plan (AOP) with the Network Operations Plan (NOP) for a better management of the arrivals based on the Target Time of Arrival (TTA)

Moving from Airspace to 4D Trajectory Management

- Optimisation of flight trajectories supported by i4D trajectory management (time based operations)

Network Collaborative Management and Dynamic Capacity Balancing

- Further development of the short term Air Traffic Flow and Capacity Management (ATFCM) Measures (STAM) coordination procedures.
- Enhanced flight-plan processing based on 4D profiles and aircraft performance provided by airlines operation centre.

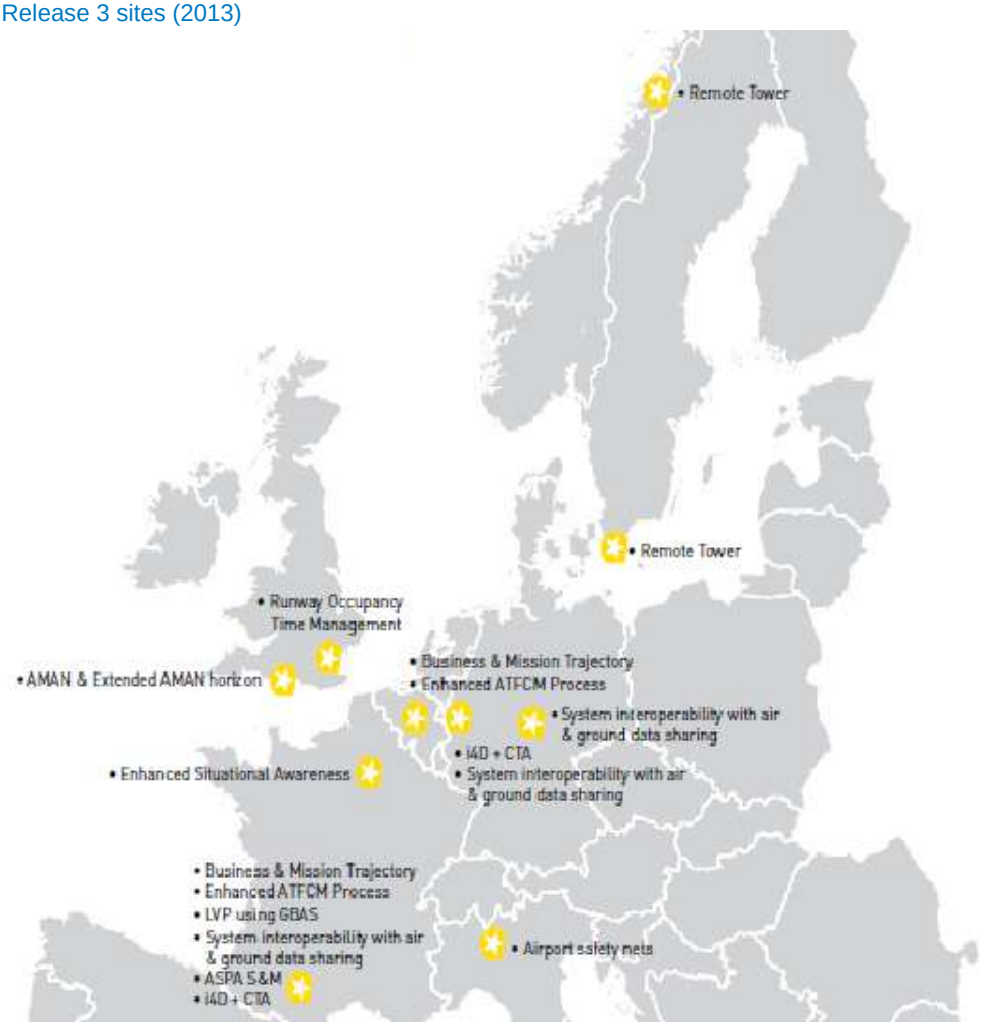
Conflict management and automation

- Enhanced Short Term Conflict Alert (STCA) system using down –linked aircraft parameters.

System Wide Information Management (SWIM)

- Co-ordination between Air Traffic Service (ATS) units through the utilisation of Flight Object exchange mechanisms.

Figure 6.5: Release 3 sites (2013)



Source: SESAR Joint Undertaking

6.3.3 Unmanned Aircraft Systems (UAS)

The work to allow the integration of Unmanned Aircraft Systems (UAS) into air traffic systems worldwide has continued in 2013. These efforts, particularly with regard to safe operations, are covered within Chapter 9 of this report and therefore focus is undertaken upon the “technicality” aspects in the present Chapter.

Recognising the need to integrate RPAS into the new generation of European ATM systems and operations, in February 2013, the SESAR JU issued a call for proposals to select a number of co-financed projects that would demonstrate RPAS integration with SESAR concepts in non-segregated airspace and also with the wider SESAR programme. Nine demonstration projects were selected and expected to take place between the third quarter of 2013 and first quarter of 2015. The importance of RPAS in the future development of European ATM was underlined further in December 2013 with a further call from the SESAR JU for a tender to shape a detailed R&D programme on civil RPAS insertion into the European

aviation system which will allow incorporation into validation activities associated with emerging SESAR programmes

n July 2013 the Australian Civil Aviation Safety Authority (CASA) said that the necessary "sense and avoid" technology to allow unmanned aerial vehicles (UAVs) to share the airspace with other aircraft had not yet reached the necessary level of development for safe operations, but the problem was being worked on[111]. CASA and other Australian organisations are working to accommodate the framework to cover the emerging requirements for UAVs.

Also in July 2013 the US FAA UAS integration manager stated that the FAA had formed aviation rulemaking committees to look at amending aircraft right-of-way rules and to develop the technological requirements for a UAS "sense and avoid" system to allow platforms to be introduced into US airspace[112]. The FAA has a mandate to introduce UAS into US airspace from September 2015. The US FAA also announced on 26 July 2013 that it had issued restricted category type certificates to a pair of "small" (<55lb) UAS with the aim that this would lead to the first approved commercial UAS operations later in the summer[113]. On 12th September 2013 the first FAA-approved commercial flights of a UAS took place above the Arctic Circle[114].

Also in September 2013 it was announced that the Air Line Pilots Association (ALPA) was participating in working groups on the use of UAS with the FAA, ICAO and the RTCA[115]. ALPA first VP Sean Cassidy commented "Clearly… anybody who is realistic understands the world will be inclusive of UASs in future. If that's the case, we want to make sure that it's done as safely as possible and that importance of having professional pilots operate these things is recognised".

In October 2013 the US Air Traffic Control Association (ATCA) president and CEO Peter F Dumont stated that with constant growth and debate on the national airspace system (NAS), dialogue and panellists at the ATCA 58th annual meeting should focus on how to tangibly achieve future aviation goals. These discussions included the use of UAS[116].

November 2013 saw US FAA administrator Michael Huerta stating that the "FAA has made "very solid progress" with the establishing of standards for UAS and the recently published UAS roadmap "addresses the policies, regulations, technologies and procedures that we will need in order to successfully integrate unmanned aircraft on a routine basis[117].

Also in November the École Nationale de l'Aviation Civile (ENAC) head of air transport air traffic control said that the air traffic control community needed time to analyse and identify areas of vulnerability and possible threats with integration of UAS into airspace with commercial traffic, so as to introduce appropriate protections and eliminate or mitigate risks.

---

[111] CASA: Technology not yet ready for UAVs in shared airspace, CAPA 18th July 2013 (after *The Australian, 18th July 2013)*

[112] US FAA forms committees to introduce new rules for unmanned aircraft systems, CAPA 23rd July 2013 (after *AINonline, 22nd July 2013)*

[113] FAA certifies a pair of unmanned aircraft systems for operating in US airspace, CAPA 29th July 2013

[114] First commercial small unmanned aircraft flights above the Arctic Circle approved and operated, CAPA 24th September 2013

[115] ALPA joins working groups on UAS operations, CAPA 3rd September 2013 (after *AINonline, 2nd September 2013*)

[116] ATCA meeting to focus on achievement of future aviation goals, CAPA 11th October 2013

[117] ENAC calls for netter civil-military ATC cooperation, work to integrate UAS, CAPA 13th November 2013 (after *The Washington Times, 7th November 2013*)

Going forward, the use of “drones” is still a “hot topic” although mainly for use at low level where the interaction with regular air traffic will be minimal. It is however expected that 2014 will see further discussions and developments in this area.

6.4 Global ATM Development Summaries

6.4.1 ICAO Global Air Navigation Plan (GANP) and CANSO Vision 2020

At the 38th Session of the ICAO Assembly (24 September - 4 October 2013), Member States endorsed the second edition of the Global Aviation Safety Plan (GASP) and the fourth edition of the Global Air Navigation Plan (GANP)[118]. Together, they aim to provide strategic planning frameworks for ICAO, the regions, States and industry to ensure the harmonisation and co-ordination of efforts aimed at aviation safety and operational improvements over the period 2013 to 2028.

The GANP represents a 15-year strategic methodology which leverages existing technologies and anticipates future developments based on State/industry agreed operational objectives. The rolling ICAO work programme is endorsed by the ICAO Assembly on a triennial basis. The Block Upgrades structured approach adopted within the GANP uses five-year time increments as a basis for development and implementation strategies that can generate commitment from States, Regions, equipment manufacturers, operators and service providers.

The GANP and ASBU are to a large extent based on input from SESAR and NextGen. To contribute to the global interoperability the ATM Master Plan was updated in such a way that its elements are aligned with the ASBU. European coordination between organisations and States took place for A38, emphasizing also the need for an ICAO standardisation road map and a work programme reflecting the GANP/ASBU and its priorities.

6.4.2 United States

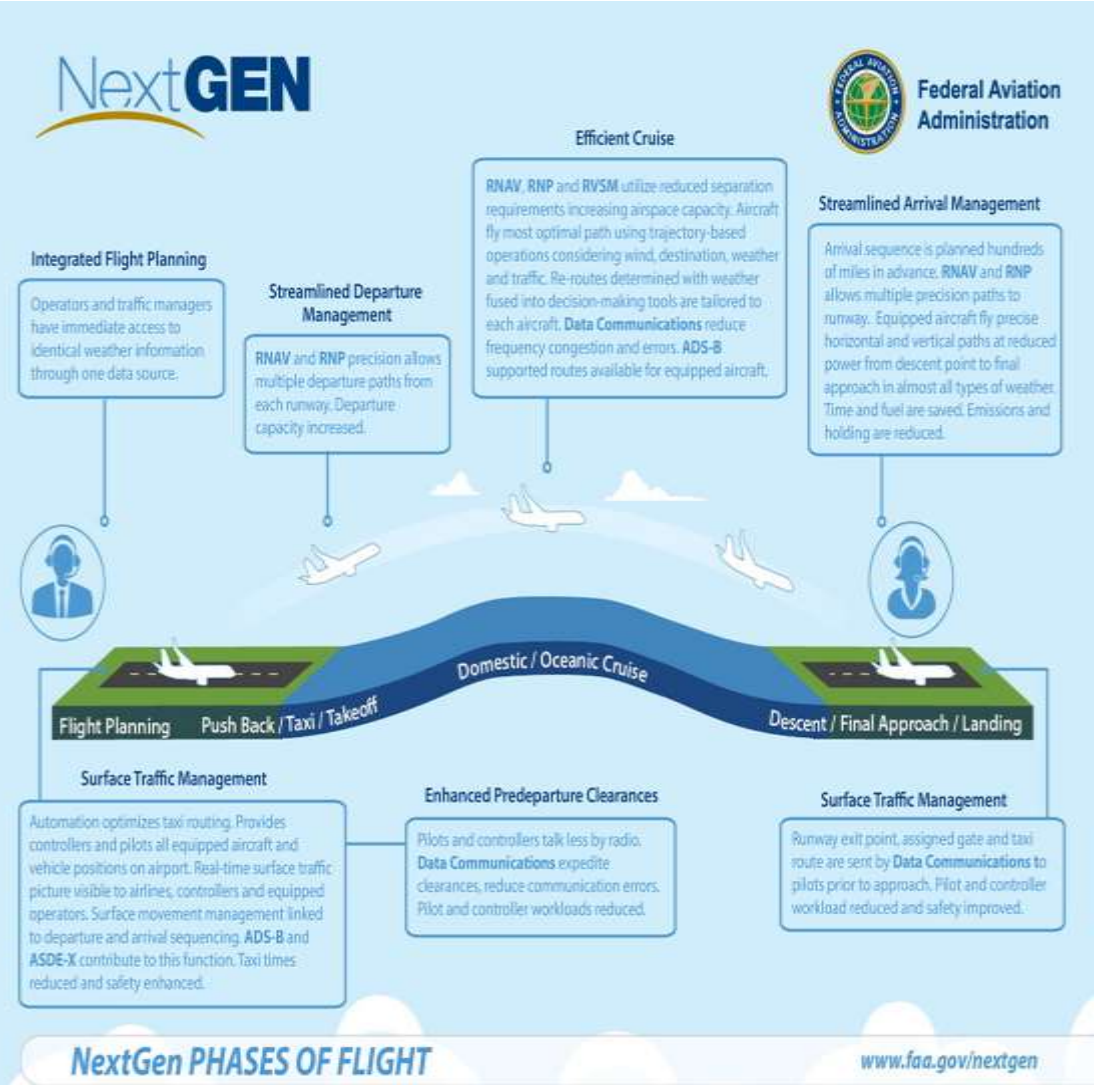
NextGen and FAA funding

In June 2013, the US FAA issued the annual update to its NextGen Implementation Plan[119].

[118] Global Air Navigation Plan 2013-2028, ICAO Doc 9750-AN/963 Fourth Edition 2013

[119] NextGen Implementation Plan, Federal Aviation Administration, June 2013

Figure 6.6: NextGen description



Source: FAA

NextGen is an umbrella term for the ongoing transformation of the National Airspace System (NAS) in the United States. At its most basic level, NextGen represents an evolution from a ground-based system of air traffic control to a satellite-based system of air traffic management. Key to this is the use of Automatic Dependent Surveillance-Broadcast (ADS-B) coupled with airspace redesign and the use of Performance Based Navigation (PBN) procedures for separation assurance (see Figure 6.6).

The FAA stated the NextGen programme is demonstrating continuing momentum in 2013 in its drive to make US aviation operations safer and more efficient. The FAA estimates that by the end of the NextGen mid-term, in 2020, NextGen improvements will reduce delays by 41% compared to what would happen if no further improvements were made. Additional benefits are an estimated saving of 1.6 billion gallons in fuel and a reduction of 16 million metric tonnes in carbon dioxide emissions. Together these are estimated to account for $38 billion in cumulative benefits, but this estimate has been revised upwards by over 50% in this year's plan largely as a result of a revised estimate on the value of passenger' time lost to delay. In

2012, the US Department of Transport (DOT) estimated this as $43.50 per hour[120] compared to the previous value of $28.60 per hour which had been in use for over a decade.

Set against these benefits, however, are the estimated costs of NextGen, the initial price estimate being $40 billion, a large chunk of which needs to be raised through passenger air fare taxation and then agreed and allocated annually through the FAA budget. The cost benefit case is largely made on the basis of the importance of aviation to the nation's economic health, but the current funding system does not really incentivise aircraft operators to use FAA services in the most efficient manner. On top of this, the FAA has been facing criticism[121] for its implementation delays and cost over-runs related to its air traffic control modernisation effort. This means that the benefits of NextGen are unlikely to be fully delivered by its original target date of 2025, and that the costs will be significantly greater than the initial estimate. As a result of increased scrutiny, FAA has been forced to identify priorities in advance of likely fiscal 2014 cuts, which include, for the first time, $43.6 million (4.7%) of cuts in NextGen capital investment funding[122].

The US Air Traffic Organisation (ATO) was created as the operations arm of the FAA to apply business-like practices to the delivery of air traffic services. As a governmental performance-based organisation, ATO's objectives are to increase efficiency, take better advantage of new technologies, accelerate modernisation efforts, and respond more effectively to the needs of the travelling public, while enhancing the safety, security, and efficiency of the US air transportation system[123].

The FAA has on two occasions (1997 and 2000) attempted to introduce overflight fees payable by airlines and be directly related to the costs of the ATC services provided. On both occasions, the fees were successfully challenged in court by the airlines. The signing of the Vision 100 – Century of Aviation Reauthorisation Act in December 2003 permits the FAA to charge overflight fees once more. However, the amounts collected (some US$ 57.6M in 2011) remain marginal compared to the overall ATO continental costs.

Based on the MOC EU-USA on research and development Annex I is applied for cooperation between SESAR and NextGen. In February 2013, Annex II has been signed for performance.

US/Europe ATM Comparison

In November 2013, the EUROCONTROL Performance Review Commission (PRC), in association with the FAA, published two reports comparing the operational and economic performance of Air Traffic Management (ATM) in the US and Europe. In future, these activities fall under Annex 2 of the MOC EU-USA.

[120] Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis, Memorandum to US Department of Transportation, 28 September 2011

[121] Air Traffic Control Modernisation, Management Challenges Associated with Program Costs and Schedules Could Hinder NextGen Implementation, United States Government Accountability Office (GAO), Report to Congressional Committees, February 2012

[122] Causes of Delays to the FAA's NextGen Program, Hearing before the Subcommittee on Aviation of the Committee on Transportation and Infrastructure House of Representatives, 113-30, 17 July 2013

[123] U.S. President Executive Order EO13180, December 7,2000.

Table 6.4: US/Europe ATM comparison study – 2013 system parameters

Calendar Year 2013	Europe[15]	USA[16]	US vs. Europe
Geographic Area (million km^2)	11.5	10.4	≈ -10%
Nr. of civil en route Air Navigation Service Providers	37	1	
Number of Air Traffic Controllers (ATCOs in Ops.)	17 200	13 400[17]	≈ -22%
Number of OJT/developmental ATCOs	1 000	1 740	≈ +74%
Total ATCOs in OPS plus OJT/developmental	18 200	15 140	≈ -17%
Total staff	58 000	35 500	≈ -39%
Controlled flights (IFR) (million)	9.6	15.1	≈ +57%
Flight hours controlled (million)	14.3	22.4	≈ +57%
Relative density (flight hours per km^2)	1.2	2.2	≈ x1.7
Share of flights to or from top 34 airports	67%	66%	
Share of General Aviation	3.9%	21%	
Average length of flight (within respective airspace)	551 NM	515 NM	≈ -7%
Number of en route centres	63	20	-43
Number of APP units (Europe) and terminal facilities (US)	260	163	-97
Number of airports with ATC services	425	516[18]	+91
Of which are slot controlled	> 90	4[19]	
Source	EUROCONTROL	FAA/ATO	

Source: Eurocontrol/FAA

The first report[124] (updated in July 2014) provides a high-level comparison of operational ATM performance between the US and Europe from 2008 to 2013. Table 6.4 shows a comparison of the key parameters which defined the study of the US and European ATM systems in 2013.

Building on established operational key performance indicators, the goal of the joint study was to understand differences between the two ATM systems in order to further optimise ATM performance and to identify best practices for the benefit of the overall air transport system. The study found that following declines between 2002 and 2007, operational performance had improved on both sides of the Atlantic between 2008 and 2013 albeit in a context of declining traffic.

Variations observed in specific performance indicators often arise due to differences in ATM policy, implementation or operating strategies, such as:

- when and where air traffic flow management measures are applied;
- a more fragmented structure of service provision in Europe;
- greater flexibility of the US system in mitigating demand/capacity imbalances through the use of traffic flow initiatives that are coordinated across multiple en route centres;

[124] Comparison of Air Traffic Management-Related Operational Performance: U.S./Europe, Eurocontrol and FAA, November 2013

- Airline and airport scheduling, their impact on airport throughput and the ability to effectively sustain airport throughput in bad weather.

By way of example, Table 6.5, extracted from the report, shows a comparison in trend performance of ATM departure gate delays for Europe and the US for the period 2008 to 2013.

Table 6.5: US/Europe ATM comparison study - ATM-related departure holdings at gate

Only delays > 15 min. are included.		EUROPE				US (CONUS)			
		2008	2010	2012	2013	2008	2010	2012	2013
	IFR flights (M)	5.5	5.0	4.9	4.8	9.2	8.6	8.4	8.3
En route related delays >15min. (ATFM)	% of flights delayed	5.0%	5.8%	1.9%	1.4%	0.8%	0.5%	0.6%	0.6%
	delay per flight	1.4	1.9	0.5	0.4	0.3	0.2	0.2	0.2
	delay per delayed flight	28	32	28	31	41	37	37	37
Airport related delays >15min. (ATFM)	% of flights delayed	2.8%	3.1%	2.0%	1.7%	4.3%	2.5%	2.2%	2.6%
	delay per flight	0.9	1.1	0.6	0.5	2.3	1.3	1.2	1.5
	delay per delayed flight	32	36	32	33	55	53	53	57

Source: Eurocontrol/FAA. EDCT = Estimated Departure Clearance Time; ATFM = Air Traffic Flow Management

On average, en route related delays per flight at the gate are much lower in the US whereas airport related ground holdings are – despite a considerable improvement between 2008 and 2012 – slightly higher in the US.

The share of flights affected by departure restrictions at origin airports also differs considerably between the US and Europe. Despite a reduction from 5% in 2008 to 1.4% in 2013, flights in Europe are still much more likely to be held at the gate for en route constraints than in the US where the percentage fell to 0.6%. The significant improvement in Europe in 2013 is partly due to lower traffic levels than in 2008 but may also be due to an increased focus on the average en route ATFM delay indicator in the first reference period of the Single European Sky performance scheme (2012-2014).

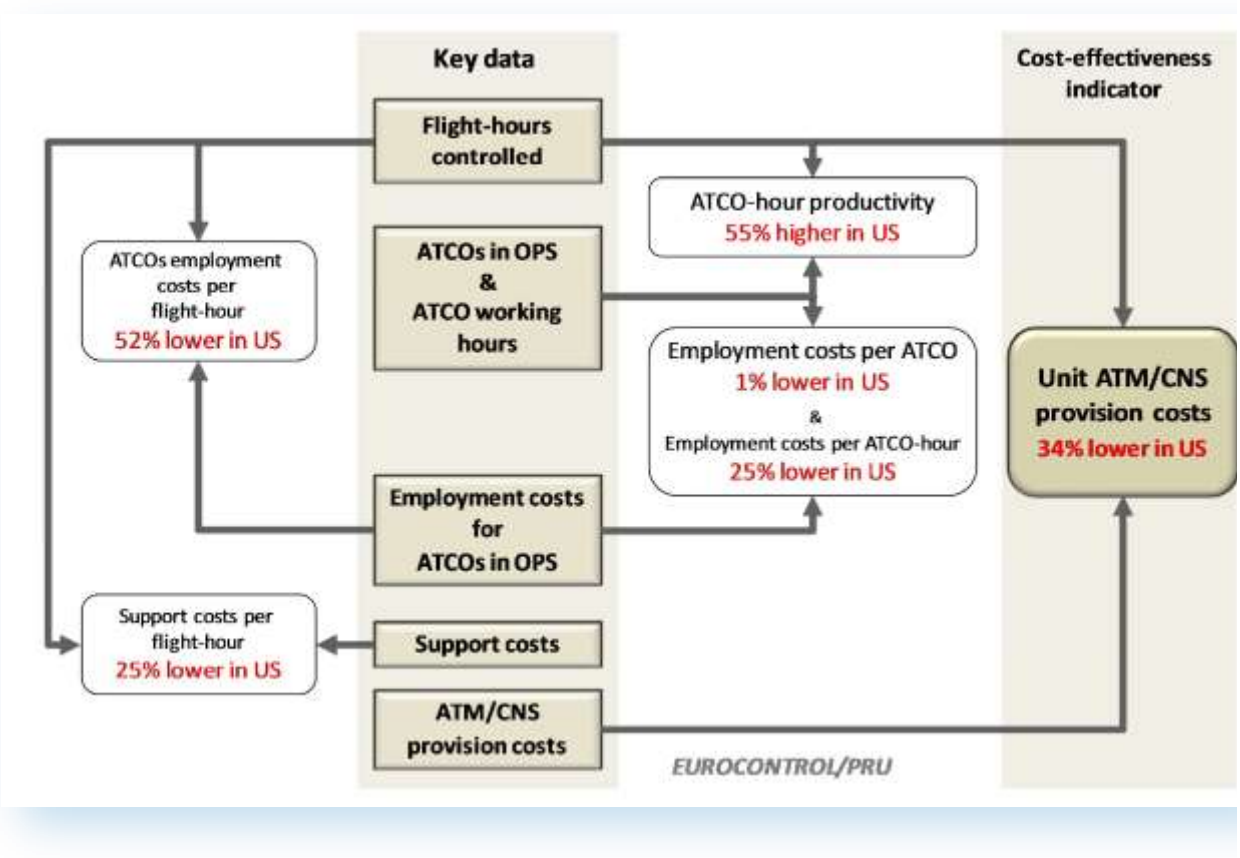
Although slightly higher, for airport related delays the percentage of delayed flights at the gate is more comparable in both ATM systems (1.7% in Europe vs. 2.6% in US in 2012). At the same time, both the airport and en route related ground holding per delayed flight in the US are higher as in Europe. In Europe, (ATFM) ground delays are used much more frequently in the US for balancing demand with en route and airport capacity, which consequently leads to a higher share of traffic affected but with a lower average delay per delayed flight.

The second report[125] compares Air Navigation Services (ANS) gate-to-gate cost-efficiency trends and underlying drivers between 2002 and 2011. It was prepared by the PRC in co-operation with the FAA. It builds on EUROCONTROL's ATM cost-effectiveness (ACE) framework and data submitted by air navigation service providers for economic benchmarking purposes. Although the gap has narrowed, unit costs in the US were still around 34% lower than in Europe in 2011. The observed gap in ANS cost-

[125] U.S. Europe continental comparison of ANS cost-efficiency trends

efficiency performance arises from considerably higher productivity and lower unit support costs in the US compared with Europe (see Figure 6.7).

Figure 6.7: US/Europe ATM comparison - ANS cost-efficiency

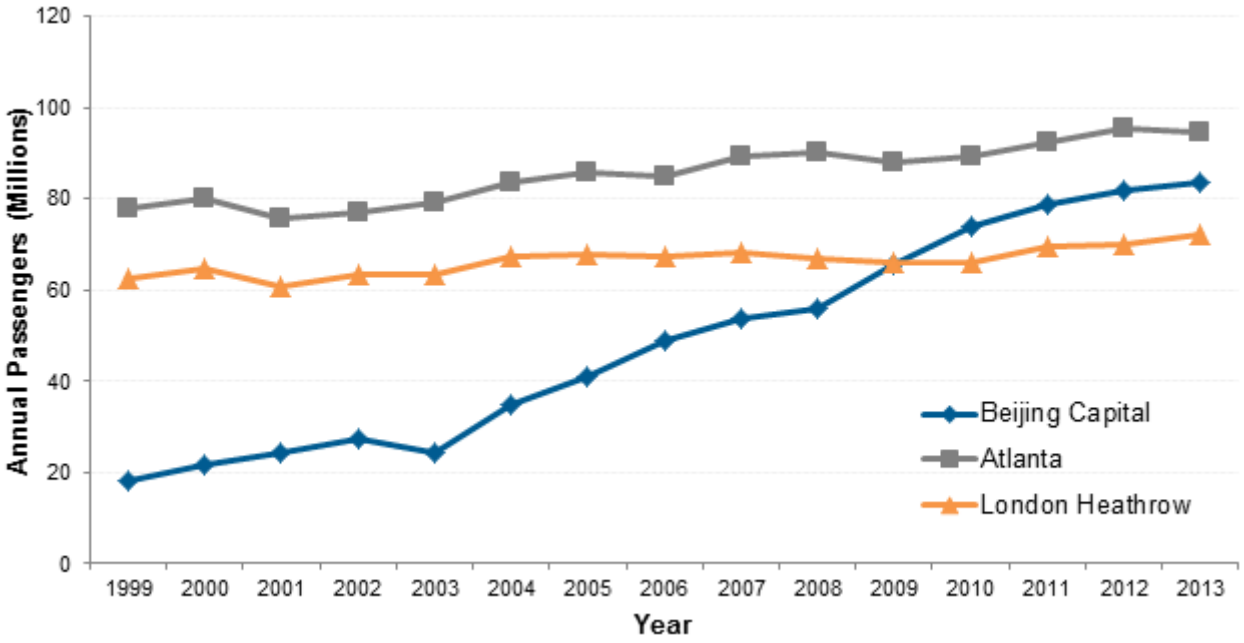


Source: EURCONTROL PRC

6.4.3 China

The skies over China are more crowded than ever, with air traffic increasing faster than any other region. As a result, air traffic controllers throughout China face the daunting task of managing the seemingly relentless increases in air traffic. Among these controllers are those at China's busiest airport, Beijing Capital City International Airport (PEK), which recently replaced London Heathrow as the largest hub in the world. PEK is also the world's second busiest airport by passenger volume after Hartsfield-Jackson Atlanta International Airport (Figure 6.8). It has experienced exceptionally rapid passenger growth with an average annual growth rate of about 12% per annum (since 1999), compared to around 1% to 1.5% per annum for Heathrow and Atlanta.

Figure 6.8: Growth in Beijing Capital Airport compared to Atlanta and London Heathrow



Source: Mott MacDonald, ACI

Despite the fact that China has a much greater population and the same amount of land as Europe and the United States combined, it has only a tenth the number of airports compared to the United States and about two-tenths the number of airports compared to Europe. China currently generates less than half the number of passengers traveling by air compared to the United States or Europe, but by 2020 this ratio is expected to be reversed.

According to the 12th Five Year Plan (2011-2015) mapped out by the Civil Aviation Administration of China, there will be more than 230 civil airports in China by 2015. This allows for 10.4 million aircraft movements a year whereby a punctuality rate of no less than 80% is set to be achieved. Currently, the main airports in large Chinese cities are amongst the busiest in the world with passenger traffic growing at an average rate of 10% annually. Therefore it is essential for the Chinese civil aviation authorities to improve the efficiency of air traffic management and airport operations to allay the congestion and safety concerns raised by the surging traffic.

In September 2013, Airbus and China's Air Traffic Management Bureau (ATMB) signed a Memorandum of Understanding (MoU) to co-operate on modernising the country's ATM system and to implement the latest ATM technologies. The MoU focuses on improving air transportation, capacity and efficiency, while contributing to a sustainable future. It will also help in harmonising China's ATM, globally and regionally. The current projects under the MoU aim at enhancing capacity through better Air Traffic Flow Management (ATFM), introduction of Airport Collaborative Decision Making (A-CDM) and enhancements to Instrument Landing Systems at Chengdu and Beijing Capital Airports.

In October 2013, a China Air Traffic Management Summit was held to provide an opportunity for domestic and foreign air traffic management authorities, military air traffic control authorities, airports, airlines,

equipment suppliers, solution providers and academics to network and brainstorm on the topic of promoting the safe, efficient and green development of China's civil aviation industry.

6.4.4 Latin America

In recent years, the air transport sector has grown at a high rate in the South American region. This growth calls for safety and efficiency improvements in the air traffic management system. Although significant improvements have been successfully introduced in both areas, a commitment at the highest level is required in order to face the challenges involved in maintaining stable growth rates in the sector.

In October 2013, the ICAO Meeting of Air Navigation and Safety Directors analysed the safety and air navigation status in the Region, and selected 5 indicators for monitoring safety objectives, focusing on safety oversight, accidents and serious incidents, runway excursions and incursions, aerodrome certification, and SSP and SMS implementation. For air navigation objectives, 10 indicators were established. In December, the Civil Aviation Authorities of the SAM Region committed to goals in each of these areas, to be achieved by 2016.

Airspace management is the focus of a US Brazil aviation partnership agreed in 2012 to support Brazil's aviation infrastructure development, while connecting US companies to the growing business opportunities in the sector. The Aviation Partnership is a unique public-private partnership that will support bilateral cooperation in areas such as airport expansion, airspace management, safety and security. Meanwhile, European companies such as Thales continue to be key providers of ATM solutions in Latin America. Thales has long established relationships with major ANSPs in Mexico, Brazil, Dominican Republic and Chile is the regional leader for ATM. In August 2013, the agreement between the European Union and the Government of the Federative Republic of Brazil on civil aviation safety came into force (see Aviation Safety and Security Chapter).

6.4.5 Asia Pacific

ICAO estimates that air traffic in the Asia Pacific region will triple by 2030. With this anticipated growth in air traffic, the aviation industry faces many challenges. Major Air Navigation Services Providers (ANSPs) around the world acknowledge that ATM is a critical link in the entire aviation ecosystem. ATM technologies and solutions must be developed to provide greater capacity, enhance efficiency and maintain high safety standards in the region.

Singapore has been actively contributing to regional ATM modernisation and harmonisation efforts in support of ICAO's "One Sky" vision, collaborating with ICAO, international and regional partners to address ATM challenges in the region. Such cross-border collaborations will further contribute to ATM harmonisation and interoperability across regions, building capabilities and performance, as well as aid the region in moving up the ATM value chain in line with the rest of the world. Singapore plans to share the amassed knowledge of concepts, technologies and solutions customised for the Asia Pacific with its international partners. For example, in February 2014, Civil Aviation of Authority Singapore (CAAS) and Mitre announced their intent to establish an ATM centre which is expected to perform over $US100 worth of ATM research and analysis over the next 10 years.

Meanwhile, the Single Aviation Market (SAM) of the 10-member Association of Southeast Asian Nations (ASEAN) is not coming about as fast as some had hoped. This is despite the advantages they see through liberalisation of air services under a single and unified air transport market. Air travel is part of a larger

discussion among member states, where they are aiming to increase economic integration through the conciliation of trade and investment policies. However, only third, fourth and fifth freedoms are currently being considered, while seventh freedom relaxations and the right to cabotage have yet to be addressed. Indonesia's decision to refrain from joining a true SAM is due largely to it wanting to protect against competitors, primarily Singapore, Malaysia and Thailand. Indonesia has the ability to offer foreign carriers hundreds of unlimited access points, while many countries can offer only one point of access. Accordingly, a true SAM is unlikely to come into fruition by 2015.

In February 2014, an EU-ASEAN Aviation Summit resulted in a joint declaration to take aviation cooperation to a new level by negotiating a comprehensive air transport agreement between the EU and ASEAN. The Summit brought together some 300 political and business leaders including a number of EU and ASEAN Transport Ministers. The Summit discussed the rich opportunities in the EU and ASEAN aviation markets and the benefits which both the EU and ASEAN stand to achieve from greater market access and integration in air services and the aviation industry, cooperation to enhance the efficiency of air traffic management and harmonisation of safety and security standards, amongst others. In particular, the Summit noted these and more potential benefits that the peoples and companies of both regions could enjoy from a comprehensive air transport agreement between the EU and ASEAN.

6.4.6 Middle East

IATA forecasts that Middle East carriers will make record profits of $1.6 billion in 2013, and $2.1 billion in 2014. In part, these results are the consequence of a helpful geographical location, within a few hours of many of the world's busiest aviation hubs. But there are other factors also at work. The Gulf in particular has an energetic set of carriers with the vision to exploit this advantage; and governments that understand the benefits of air connectivity and encourage it through policies such as low taxation and the construction of world-class infrastructure.

For example, Dubai's new Al Maktoum International airport, which saw its first commercial flight in 2013, is forecast to cost more than $32 billion and, when complete, will have five runways capable of handling an annual 160 million passengers, two thirds of whom will simply be transiting, en route to their ultimate destinations.

At one level this connectivity generates a measurable benefit, supporting more than 2.7 million jobs and $129 billion in GDP. But at another level, air connectivity also provides cultural ties, business opportunities and tourism, without which the Middle East would feel a very different place.

Although the growth of air connectivity in the Middle East has been one of the standout aviation success stories of recent years, aviation in the region still faces a number of challenges. Many of these concerns are common across the world, and they require a coordinated response from both the industry and governments, working together.

Airspace capacity remains a worry in the Gulf region in particular. In common with the rest of the world, airspace is fragmented on national boundary lines. But the tremendous growth of aviation in the Gulf means that there has been less time to adapt air navigation institutional and political arrangements to cope with the impact of growth. Without reform, a lack of capacity in the sky could unfortunately negate the success of the investment in ground facilities. The issue over establishing an effective regional body to deliver airspace optimisation is proving the greatest challenge in boosting capacity in the Middle East.

While global aviation's sovereign body ICAO engages with all Middle Eastern states and coordinates at policy level, an alternative forum to coordinate and support the implementation of regional airspace activities emerged three years ago in the form of MEAUSE or "Middle East Air Navigation Service Provider, Airspace User & Stakeholder Engagement" which CANSO hopes will become the focal point for developing solutions.

In November 2013, CANSO held its 4th MEAUSE Conference in partnership with IATA and hosted by Jordan Civil Aviation Regulatory Commission (CARC). The conference brought together close to 70 Middle East aviation stakeholders across the complete value chain. They discussed progress on CANSO MEAUSE activities, agreed on joint activities and targets, tracked progress against work plan results, discussed quick-wins and exchanged experience and best practices.

The issue over whether national initiatives can really be implemented in parallel with the broader region's needs was also highlighted by the completion in 2013 of the UAE's airspace and air traffic management system study, developed jointly with Airbus ProSky. While the study aims to address how the UAE's airspace structure and ATM system should develop in order to handle the projected traffic growth, it is also critical to determine how the study's recommendations integrate with regional needs. Regional rivalries will undoubtedly persist but at least the Middle East can draw on the growing number of examples from around the world where co-operation has delivered tangible improvements to airspace efficiency and capacity.

In much the same way that fragmentation forced the European region to adopt its ambitious Single European Sky initiative, so the Middle East is recognising that its own fragmentation is creating safety, efficiency and capacity challenges for the region that can only be effectively tackled through cooperation and planning.

6.4.7 India

Air traffic continues to grow strongly in India, with the Ministry of Civil Aviation India (MoCA) forecasting average annual growths of 12% per annum in domestic traffic and 8% per annum internationally over the next 5 years. Airspace and Air Traffic Management infrastructure will be of critical importance during this next growth phase. Air Navigation Services in India are provided by the Airports Authority of India (AAI), which is also the largest airport operator in the country measured by the number of facilities, at approximately 130 airports across the country. The AAI controls a large airspace of 9.5 million square kilometres, of which 5.9 million square kilometres is oceanic.

The Indian air navigation system master plan includes significant investment in modernisation of airport infrastructure, enhancements in manpower and training and upgrades to Communication Navigation Surveillance (CNS), harmonised with global initiatives and regional air navigation plans. For example, India's GPS aided GEO augmented Navigation system known as GAGAN is currently being rolled out. But in order to build up the required infrastructure for air navigation services in the country, not only is significant investment in technology required, but also training and in augmenting skilled manpower including adequate number of air traffic controllers (ATC). Industry sources suggest that the investment required for ANS alone would be not less than US $ 7 billion for the next 5 – 6 years. Presently, there is a shortage of Air Traffic Controllers. Unless concerted efforts are taken to develop and retain adequate number of skilled manpower, sustaining the air traffic growth without having safety implications could be challenging.

MoCA has constituted a committee for formulating the next generation ANS master plan to enhance capacity and safety levels in the face of higher air traffic movements in future. The ANS infrastructure would move towards greater integration and automation with implementation of state-of-the-art technologies. The system would include a centralised Air Traffic Flow Management with networked VHF and Radars capable of providing dynamic sectors, which permits alignment with the traffic pattern. Existing software and hardware infrastructure would be upgraded or replaced.

Corporatisation of air navigation services is expected to pave the way for raising resources towards funding the ANS infrastructure but the issue of separating the provision of air navigation services from the provision of airport services has been pending for a long time. It was first proposed in 1976, and the Naresh Chandra Committee, which was appointed in 2002 to examine various corporate issues, recommended to the Ministry of Finance and Company Affairs to set up a separate entity in charge of air navigation services. AAI and the Government of India are currently giving full consideration to a report released in May 2012, which suggests hiving off air navigation services from airport operation.

6.4.8 Australia

In June 2013, Airservices Australia and Australia's Defence Department released a joint tender seeking a next generation ATM system to help harmonise civil and military air traffic control. As part of the OneSKY Australia initiative, the new platform is expected to replace the Australian Advanced Air Traffic Control system used by Airservices and the similar Australian defence Air Traffic System used by the Royal Australian Air Force. With air traffic in the region expected to grow by more than 50 per cent in the anticipated life of the new platform, and with the introduction of new concepts to improve airspace organisation and airport operations, the upgrade will be a significant milestone in Australian aviation.

Although Australia is today recognised as a world leader, a 2013 report from Australia's Civil Aviation Safety Authority (CASA) was highly critical of Airservices Australia. Of prime concern was a spike in late 2011 and 2012 in the number of incidents where the recognised separation between aircraft had broken down or loss of separation assurance (LOSA) had been incorrectly applied by air traffic controllers. Of further concern to CASA was the fact that Airservices had not been able to determine the root causes of the increase in these incidents. The review highlighted many flaws and shortcomings meaning that Airservices' approval to provide services is now subject to a finite three year renewal period of its licence. During this time it will require frequent audits and oversight to fix the shortcomings.

Some of the issues highlighted are probably not unique to Australia, but being a leader, they may be coming to light earlier than in the rest of the world. A good example of one of the issues currently experienced by Australia is the technological shift from radar to satellite navigation systems such as ADS-B and its human factor impact. Any lessons learnt from the current scrutiny of Airservices could well be applicable in the future to other parts of the globe where similar systems are being introduced.

7 Market and Competition Issues 2013

7.1 Introduction

This section on Market & Competition Issues addresses the key developments and trends in the EU's external Aviation Policy, Competition Policy of the EU, US and other world regions in 2013.

In essence, 2013 saw several key trends surface. The liberalisation of aviation markets, and the increasingly manifest geopolitical shift in growth to the Middle East and Asia, as well as the diversion of indirect traffic to hubs in the proximity of Europe and the increasing proliferation of low cost carriers in Europe has given rise to structural changes in the airline landscape. The financial difficulties several legacy carriers face have resulted in intensified state aids and subsequent investigations of these for their compliance with EU law, or led to investments from third country parties which in turn likewise necessitate regulatory scrutiny.

Given these marked developments, Chapter 7 provides an overview of decisions taken by the European Commission, including areas affecting the level playing field; but specific cases are analysed more deeply as they are symptomatic for the structural changes aviation policy is facing.

This Chapter also provides a sample of extrapolations to highlight developments which will require the Commission's attention in 2014 and beyond.

7.2 International Air Services Agreements (2013)

In 2013, the following Air Service Agreements (ASAs) were discussed or concluded:

1. **EU External Aviation Policy:**
   a. 10/01/13 : EU-Jordan : First meeting of the EU-Jordan Joint Committee
   b. 15/01/13 : EU-US: Twelfth meeting of the U.S.-EU Joint Committee
   c. 24/01/13: EU-Azerbaijan: First round of negotiations in Baku
   d. 05/06/13: EU-US: Thirteenth Meeting of the US-EU Joint Committee
   e. 10/06/13: Euro-Mediterranean Aviation Agreement between the European Union and Israel
   f. 28/11/13: EU and Ukraine for a Common Aviation Area Agreement
   g. 11-12/11/13: EU-Gulf Aviation dialogue
   h. 12/11/13: EU-Israel Joint Committee

2. **US Agreements:**
   a. 14/02/13: US-Russia Protocol to amend the January, 14 1994 ATA
   b. 25/03/13: US-Guyana Air Transport Agreement
   c. 23/05/13: US-Trinidad & Tobago Air Transport Agreement
   d. 28/05/13: US-Saudi Arabia Air Transport Agreement
   e. 08/07/13: US-Suriname Air Transport Agreement
   f. 15/08/13: US-Bangladesh Air Transport Agreement
   g. 12/12/13: US-Botswana Air Transport Agreement
   h. 12/12/13: US-Equatorial Guinea Air Transport Agreement
3. **Asia Agreements:**
   a. 16/01/13: Russia - Taiwan Air Service Agreement
   b. 07/02/13: Australia - Indonesia Air Service Agreement

c. 02/04/13: India - Singapore Air Service Agreement
d. 20/05/13: Philippines - Brazil Air Service Agreement
e. 25/06/13: Macau - Laos Air Service Agreement
f. July 2013: Australia - Malaysia Air Service Agreement
g. 08/11/13: Philippines - Israel Air Service Agreement

4. **Gulf – Middle East Agreements:**
   a. 18/01/13: UAE - Senegal Air Transport Agreement
   b. 01/03/13: Hong Kong - Kuwait Air Service Agreement
   c. 01/04/13: UAE - Australia Memorandum of Understanding
   d. 16/05/13: UAE - Mozambique Air Service Agreement
   e. 03/09/13: UAE (Abu Dhabi) - India Air Service Agreement
   f. 23/10/13: Israel - Nigeria Air Services Agreement
   g. 16/12/13: Honk Kong - Qatar Air Service Agreement

Assessing the impact of each such agreements in terms of improved connectivity, economic gain for either Contracting Party, is complex. Nevertheless, the Euro-Mediterranean aviation agreement between the European Union and Israel merits further analysis, as presented in 7.2.1.

Table 7.1: Agreement Sources

Item	Type	Website Address
1.a	Agreement	http://ec.europa.eu/transport/modes/air/international_aviation/country_index/doc/asa_eu_jordan_.pdf
1.b	Record of meeting	http://www.state.gov/documents/organization/213497.pdf
1.c	Negotiation mandate 6.10.11	http://europa.eu/rapid/press-release_PRES-11-351_en.htm
1.d	Record of meeting	http://www.state.gov/documents/organization/220749.pdf
1.e	Agreement	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:090:0010:0019:EN:PDF
1.f	Memo	http://europa.eu/rapid/press-release_MEMO-13-1065_en.htm
2.a	Memorandum	http://www.state.gov/documents/organization/205385.pdf
2.b	ATA	http://www.state.gov/documents/organization/207165.pdf
2.c	ATA	http://www.state.gov/documents/organization/212731.pdf
2.d	ATA	http://www.state.gov/documents/organization/210291.pdf
2.e	ATA	http://www.state.gov/documents/organization/212690.pdf
2.f	ATA, Memorandum of consultation	http://www.state.gov/documents/organization/213615.pdf http://www.state.gov/documents/organization/213626.pdf
2.g	ATA	http://www.state.gov/documents/organization/220746.pdf
2.h	ATA	http://www.state.gov/documents/organization/220743.pdf
3.a	News	http://www.caa.gov.tw/APFile/en/news/index01.asp?sno=102
3.b	ASA	http://www.austlii.edu.au/au/other/dfat/treaties/ATNIF/2013/4.html
3.c	News	http://articles.economictimes.indiatimes.com/2013-04-02/news/38218461_1_air-services-air-connectivity-singapore
3.d	News	http://philembassybrasilia.org/portal/index.php/embassy-news/86-philippines-brazil-initial-air-services-agreement
3.e	News	http://www.globaltimes.cn/content/791548.shtml#.Uw8SjIUZM_g
3.f	News	http://centreforaviation.com/analysis/airasia-x-emerges-as-australias-fourth-largest-foreign-airline-overtaking-rival-malaysia-airlines-123794

Item	Type	Website Address
3.g	Blog	http://www.philippineflightnetwork.com/2013/11/israel-and-philippines-agree-to.html
4.a	News	http://www.uaeinteract.com/french/news/default.asp?ID=361
4.b	ASA	http://www.doj.gov.hk/lawdoc/ASAKUWAITe.pdf
4.c	News	http://www.uaeinteract.com/french/news/default.asp?ID=361
4.d	News	http://www.uaeinteract.com/french/news/default.asp?ID=361
4.e	News	http://www.thehindu.com/business/Industry/cabinet-approves-indiaabu-dhabi-bilateral-air-services-agreement/article5089849.ece
4.f	News	http://www.galilcol.ac.il/contents/page.asp?contentPageID=600
4.g	ASA	http://www.doj.gov.hk/lawdoc/ASAQATARe.pdf

Source: Mott MacDonald

7.2.1 Euro-Mediterranean Aviation Agreement between the European Union and Israel

On 10 June 2013, the EU and Israel signed a comprehensive air transport agreement which will gradually open up and integrate their respective aviation markets.

This agreement, which supersedes all individual bilateral agreements by EU Member States in force, will only fully take effect by 2018, the date on which European airline companies will be able to put in place direct air connections from any EU Member State, and on which Israeli airline companies will be able to fly to all EU airports, without frequency and capacity restrictions, provided available airport slots.

The agreement also aims to integrate Israel into a wider Common Aviation Area with the EU, based on common rules, and Israel having to adopt regulations similar to the ones in force in the EU. In particular, common rules in areas such as aviation safety, environment, consumer protection, air traffic management and social aspects.

Regarding competition matters, the EU and Israel have agreed that the participation of the Israeli Government to help cover additional security expenses incurred by the Israeli air carriers as a result of Israeli Government instructions is not an unfair competitive practice and is not considered as subsidy[126].

Based on that provision, the Israeli government, in April 2013, accepted to increase its security expense coverage to 97,5% of extra security costs, following a strike by airlines El Al, Arkia and Israir.

7.2.2 Impact of Euro-Mediterranean Aviation Agreements

EU-Israel

Since the signing of the agreement, competition has already significantly increased in the market for flights between the EU and Israel, which indicates that European airlines had planned capacity increases for execution once the Agreement had been signed.

[126] Euro-Mediterranean aviation agreement between EU and Israel, 2013/398/EU, JOCE 02.08.13, L208-9, art.7 p. 5.

As seen in the table below, since 10 June 2013, European airlines have opened 11 new routes between the EU and Israel and scheduled the opening of 7 other routes during the 1st semester of 2014. In addition, other European airlines, which were already operating routes between the EU and Israel, have increased frequency of flights by 3 additional rotations[127] per week in 2013 and have scheduled a further increase of 7 rotations per week by the 1st semester of 2014.

Taking into account the new routes, the European airlines' offer frequency from the EU to Israel has increased by 31 rotations per week in 2013 and by 27 rotations per week during the 1st semester of 2014, which is to say an increase of 58 rotations per week since the conclusion of the agreement.

66 percent of this increase (namely 38 of the 58 rotations) is attributed to low cost carriers, especially Wizz Air (+27 weekly frequencies) and EasyJet (+6 weekly frequencies). Ryanair has also interest in opening services to Israel.

Table 7.2: New routes and increase of frequencies between EU and Israel

Effective date	Airline	From	Country	Weekly Frequencies	Change
23/01/2013	Wizz Air	Budapest (BUD)	Hungary	7	7
12/05/2013	Aegean Airlines	Heraklion (HER)	Greece	2	2
7/06/2013	Finnair	Helsinki (HEL)	Finland	2	2
15/06/2013	Wizz Air	Bucharest (OTP)	Romania	3	3
24/06/2013	Air Méditerranée	Toulouse (TLS)	France	1	1
24/06/2013	Air Méditerranée	Paris (CDG)	France	7	2
4/07/2013	Air Méditerranée	Strasbourg (SXB)	France	1	1
24/09/2013	EasyJet	Rome (FCO)	Italy	2	2
27/10/2013	easyJet	Geneva (GVA)	Switzerland	5	1
27/10/2013	Wizz Air	Vilnius (VNO)	Lithuania	2	2
29/10/2013	Wizz Air	Katowice (KTW)	Poland	3	3
24/11/2013	Wizz Air	Cluj-Napoca (CLJ)	Romania	2	2
25/11/2013	Wizz Air	Warsaw (WAW)	Poland	3	3
1/01/2014	Air Méditerranée	Paris (CDG)	France	3	-4
1/01/2014	Air Méditerranée	Strasbourg (SXB)	France	0	-1
1/01/2014	EasyJet	Manchester MAN	UK	2	-1
24/02/2014	EasyJet	Berlin (SXF)	Germany	6	1
6/03/2014	EasyJet	Milan (MXP)	Italy	3	3
30/03/2014	Alitalia	Rome (FCO)	Italy	26	3
30/03/2014	Lufthansa	Frankfurt (FRA)	Germany	17	3
30/03/2014	Lufthansa	Munich (MUC)	Germany	8	3
31/03/2014	Tarom	Iasi (IAS)	Romania	2	2
31/03/2014	Wizz Air	Prague (PRG)	Czech Republic	3	3
1/04/2014	Air Berlin	Berlin (TXL)	Germany	7	2
1/04/2014	Air Berlin	Dusseldorf (DUS)	Germany	4	2
1/04/2014	Air Berlin	Munich (MUC)	Germany	3	1
1/04/2014	Air Berlin	Vienna (VIE)	Austria	3	0

[127] It is the cumulative total of weekly frequencies added by Air Méditerranée and easyjet.

Effective date	Airline	From	Country	Weekly Frequencies	Change
1/04/2014	EasyJet	London (LGW)	UK	3	3
1/04/2014	EasyJet	Berlin (SXF)	Germany	3	-3
3/04/2014	Jetairfly	Brussels (BRU)	Belgium	3	3
1/04/2014	Wizz Air	Vilnius (VNO)	Lithuania	3	1
10/05/2014	Transavia	Paris (ORY)	France	3	3
14/05/2014	Wizz Air	Sofia (SOF)	Bulgaria	3	3

Source: air-journal.fr

At the same time, the main Israeli airline EL AL opened 3 new routes to the EU and increased its frequency of flights on the Tel Aviv–London route.

In order to compete, EL AL Israel Airlines also created a low cost subsidiary, named UP, which began operations on 30 March 2014, with flights to five destinations: Berlin, Prague, Kiev, Budapest and Larnaca. Berlin will be served up to 11 times per week whilst the remaining destinations will benefit from 6 weekly rotations.

Other important developments concerning recently concluded or on-going negotiations in the context of the EU's External Aviation Policy are briefly presented in the next section.

EU-Jordan

The Euro-Mediterranean Aviation Agreement signed between the EU and Jordan, on 15 December 2010,enabled all EU airlines to operate direct flights to Jordan from anywhere in the EU and vice-versa for Jordanian carriers. The agreement encouraged cross-investments between Jordan and Europe and removed all restrictions on prices, routes and quotas of flights between Jordan and the EU. The first Joint Committee took place in Amman on 10 January 2013.

On 16 December 2010, the low cost carrier EasyJet announced the opening of a new route between London-Gatwick and Amman, as from 27 March 2011. In doing so, EasyJet strengthened competition on that route by competing with the two national air carriers British Airways (UK) and Royal Jordanian (Jordan). On 4 May 2014, EasyJet will abandon this route without giving any explanation.

EasyJet's entry on the Jordanian market is believed to be the only significant event linked to the Euro-Mediterranean Aviation Agreement signed between the EU and Jordan.

7.3 Internal Market Issues

This section deals with recent regulatory and case-law development in terms of competition in the EU (Chapter 7.3.1), USA (Chapter 7.3.6) and third countries (Chapter 7.3.7).

Under sub-section 7.3.8, other factors affecting competition in the aviation sector will be also discussed, including issues regarding the Emission Trading Scheme (ETS), the Single European Sky (SES) and Public Service Obligations (PSOs).

7.3.1 EU Competition Policy

Important Decisions of the Commission

Airline Transatlantic Joint Ventures

On 23 May 2013, the Commission adopted a commitment decision making legally binding the commitments offered by members of the 'Atlantic Plus Plus' joint venture ("A++")[128]. With its decision the Commission accepted commitments offered by Lufthansa, Air Canada and United to address the Commission's concerns that the parties' cooperation under a revenue-sharing joint venture may be in breach of EU antitrust rules and harm premium passengers on the Frankfurt-New York route[129].

This decision is the second commitment decision adopted by the Commission in relation to the transatlantic joint venture agreements concluded within the three major global airline alliances. In July 2010, the Commission adopted a commitment decision on the joint venture between members of the Oneworld alliance and made legally binding commitments offered by British Airways, American Airlines and Iberia to ensure competition on transatlantic passenger air transport markets.[130] Finally, The Commission is currently investigating the transatlantic joint venture between certain members of SkyTeam alliance[131].

Mergers and Acquisitions

The following cases were analyzed by the Commission in 2013:

- **Approved Mergers**

US Airways / American Airlines (case m.6607[132]):

On 18 June 2013, the Commission was formally notified of the planned merger of US Airways Group and American Airlines' holding company AMR Corporation.

The Commission's investigation studied 67 trans-Atlantic non-stop and one-stop routes that could be affected by the merger and found that in all cases other than on London Heathrow-Philadelphia, the combined entity will continue to face competition from other strong competitors, notably Delta Airlines, Air France-KLM and Alitalia (members of the SkyTeam transatlantic joint venture), Lufthansa, Air Canada and United Airlines (members of the A++ Joint Venture) and Virgin Atlantic.

---

[128] The A++ multilateral, transatlantic joint venture exists between Lufthansa, (together with Austrian Airlines, SWISS and Brussels Airlines) Air Canada and United Airlines (United Air Lines and Continental Airlines merger was completed in March 2013), all members of the Star alliance. For more information see the press release: http://europa.eu/rapid/press-release_IP-13-456_en.htm?locale=en.

[129] The revenue sharing joint venture between the A++ Parties eliminated competition between them on price and capacity. The Commission had concerns that this may have resulted in higher prices for premium passengers on the Frankfurt-New York route. In addition, due to considerable barriers to entry and expansion, new and existing competitors would have been unable to challenge the market power of the parties.

[130] For more information see the press release: http://europa.eu/rapid/press-release_IP-10-936_en.htm.

[131] For more information see the press release; http://europa.eu/rapid/press-release_IP-12-79_en.htm.

[132] European Commission Case M.6607 US Airways / American Airlines, at ,http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_6607

The Commission's investigation found that the transaction would have led to a monopoly on the London-Philadelphia route out of London Heathrow Airport. Indeed, this route is only served by US Airways and British Airways, which are members of the oneworld Alliance along with American Airlines, and which concluded a *metal neutral*[133] joint venture (the Transatlantic Joint Business) approved by the Commission in its BA/AA/IB decision of 14 July 2010, with American Airlines and Iberia.

On 5 August 2013, the Commission cleared the proposed merger in accordance with the EU Merger Regulation on the condition of the release of a daily slot pair of take-off and landing at London's Heathrow Airport to induce a new airline competitor to start services to Philadelphia. American Airlines and US Airways also committed that they and their partners of the Transatlantic Joint Business would enter into agreements with other carriers to feed traffic to the new entrant[134].

- In so doing, the Commission pursued its policy of identifying markets which would lose a competitor as a result of the merger. It found that competition and thus consumer interests would not be affected by the merger on all but one Transatlantic route for which the Commission accepted commitments making entry for competing airlines timely, likely and sufficient.

After its decision of 5 August 2013, the Commission appointed Competition Rx Ltd as Monitoring Trustee to control the compliance of US Airways and American Airlines with the slots release commitment[135].

The Trustee opened the application process for the IATA Winter Season 2014/15 on 20 February 2014. Applications for slots for the Summer Season 2015 had to be submitted by Close of Business on Thursday 21 August 2014[136].

Aegean Airlines / Olympic Air (Case M.6796[137]):

On 28 February 2013, the Commission received notification of a proposed concentration by which Aegean Airlines would acquire control of its main competitor Olympic Air. The companies are the two main Greek airlines offering passenger air-transport services on Greek domestic and international routes, both based at Athens International Airport.

This was the second time that Aegean notified its intention to acquire Olympic Air. On 26 January 2011, the Commission had indeed prohibited the first proposed merger between Aegean Airlines and Olympic

[133] The basic principle behind the joint ventures is so-called "metal neutrality" which is achieved through close cooperation in capacity and price planning as well as revenue management. This allows travelers to freely combine flights from a harmonized range of offers and take advantage of additional travel options and the increased availability of special fares and connecting flights. Passengers do not need to choose a preferred partner when buying a ticket – instead, they are "neutral" in terms of the "metal" they fly with. For the airlines to reach their targets together, revenues are managed in a single "pot," itemized according to the share of production and then distributed.

[134] Case COMP/M.6607, US Airways/American Airlines, **Decision 05/08/13,** 2013/C279/02, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:C2013/279/02&from=EN

[135] Monitoring Trustee in case COMP/M.6607 - US Airways/American Airlines, http://ec.europa.eu/competition/mergers/cases/additional_data/m6607_2027_3.pdf

[136] http://www.competitionrx.com/USAA-Trustee.php

[137] European Commission's Case Page,M.6796 AEGEAN / OLYMPIC II, http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_6796

Air[138], because the concentration would have led to a quasi-monopoly on 9 Greek domestic routes out of Athens.

On 23 April 2013, the Commission opened an in-depth (phase II) investigation into the second proposed merger, considering that the proposed merger would give to the merged entity a monopoly on six domestic routes and that Cyprus Airways as the only remaining competitor on three more routes may cease operating on the domestic Greek market. This conclusion appears to have been justified seeing that on 14 June 2013 Cyprus Airways announced that it was exiting the routes from Athens to Thessaloniki, Heraklion and Rhodes.

On 9 October 2013, the Commission finally approved the acquisition of Olympic Air by Aegean Airlines, despite an ensuing monopoly on five domestic routes. The Commission's decision was based on the fact that Olympic was a failing firm due to severe financial difficulties with no prospect to become profitable in the foreseeable future. Since Olympic Air's sole shareholder decided to discontinue its financial support, it would soon go out of business should it not be sold to Aegean. Therefore, with or without the merger, Olympic Air would soon disappear as a competitor to Aegean,

The Commission has therefore declared the merger compatible with the internal market since any competitive harm caused by Olympic's disappearance is not caused by the merger.

In doing so, the Commission applied the so-called "failing firm defense", for which the criteria are defined in paragraph 90 of the Horizontal Merger Guidelines, namely:

- The allegedly failing firm would in the near future be forced to exit the market because of its financial difficulties if not taken over by another undertaking;
- There is no less anti-competitive alternative purchaser than the notified merger;
- And, in the absence of the merger, the assets of the failing firm would inevitably exit the market.

In the aviation sector, the Commission already had had precedents for this approach, but without authorizing a merger between two airlines, previous to the decision of 9 October 2013.

Table 7.3: Failing firm defence" applied to recent cases

Case	Date	Forced out of the market?	No less anti-competitive alternative?	Assets would exit the market?
Olympic - Aegean (I)	January 2011	No	No	No
IAG - bmi	March 2012	Yes	Yes	No
Aegean - Olympic (II)	October 2013	Yes	Yes	Yes

Source: EC Decision of 26.01.11, C195 Of 03.07.2012; EC Decision of 30.03.12, C161 Of 07.06.2012; EC Decision of 09.10.13, C70 Of 09.03.2013

In IAG/bmi, the Commission went into more details about the overall causality criterion pertaining to a failing firm defense. The overall criterion for assessing a failing firm defense is whether the proposed Transaction has to be considered to be the cause of the significant impediment of effective competition. In order to conclude that the Transaction is compatible with the internal market, it is necessary to establish

[138] Summary of Commission Decision of 26 January 2011 declaring a concentration to be incompatible with the internal market and the EEA Agreement, Case COMP/M.5830 — Olympic/Aegean Airlines, 2012/C 195/10, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012XC0703%2801%29&from=EN

whether the likely outcome(s) of the counterfactual would produce deterioration of the competitive structure in the market to a similar degree compared to the merger. The Commission had indications that absent the Transaction competition in the market would not deteriorate to the same extent as it would should the Transaction go through.

Following the merger, Aegean Airlines and Olympic Air reported on January 2014 the following annual performance for 2013:

- 12% increase in their traffic carrying in total 522 thousand passengers, 57 thousand more compared to the same month in 2013; unclear: year on year vs month
- Significant growth in passenger numbers on international flights from Athens' (+9%) and Thessaloniki's bases, due to the further development of their activity from the airports of Geneva, Kiev, Warsaw and Prague, and due to the recovery of traffic to traditional destinations such as Madrid, Brussels and Moscow;
- Significant growth on domestic traffic: 18% out of the Athens base, 41% out of the Thessaloniki base, both due to Aegean Airline's new pricing policy.

In terms of competition, the merged entity has become the sole competitor on the route from Athens to Thessaloniki, Heraklion and Rhodes, all three abandoned by Cyprus Airways.

However, due to the new pricing policy of Aegean Airlines, the prices on the above routes, as well as on routes from Athens to Chania, Santorini, Mytilene, Corfu, Alexandroupolis and Kos – on which Aegean Airlines has become the only operator following the merger – have remained stable.

Delta Air Lines / Virgin Group / Virgin Atlantic Limited (Case M.6828[139]):

Delta Air Lines (and the Delta Connection carriers) offer passenger air transport services to more than 350 destinations in 66 countries on 6 continents. As a member of the SkyTeam global alliance, Delta also participates in a trans-Atlantic joint venture with Air France-KLM and Alitalia.

Virgin Group is the holding company of a group of companies active in a wide range of products and services worldwide. Virgin Atlantic, a UK air carrier flying to 34 destinations worldwide, has no integrated joint ventures and is not a member of any global airline alliance.

On 8 April 2013, Delta Air Lines and Virgin Atlantic filed an application with the US Department of Transportation seeking antitrust immunity for their new joint venture on flights between North America and the United Kingdom.

On 15 May 2013, the European Commission received a notification of a proposed concentration by which Delta Air Lines and Virgin Group acquire joint control of Virgin Atlantic by way of purchase of shares from Singapore Airlines.

In their filing, Delta Air Lines and Virgin Atlantic noted that nearly 60 percent of the slots at London Heathrow Airport are controlled by the American Airlines/British Airlines (AA/BA, both members of the oneworld joint venture which, as a result, dominates air travel between the US and the UK, including the largest transatlantic market New York-London.

[139] European Commission's Case Page,http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_6828

Delta Air Lines and Virgin Atlantic sought antitrust immunity for a joint venture on North America-UK routes in order to create a beneficial counterweight for the AA/BA immunized alliance dominating the market.

Delta Air Lines and Virgin Atlantic were aiming to expand the quantity and quality of travel options for customers of both airlines by:

- Working together on schedules, network planning, pricing and revenue management functions, sales and other aspects of their services between North America and the UK;
- Coordinating with Delta Air Lines' other joint venture with Air France, KLM and Alitalia.

On 20 June 2013[140], the Commission, working closely with the US Department of Justice and Department of Transport, cleared the proposed acquisition of joint control over Virgin Atlantic by Delta and Virgin Group. Delta will replace Singapore Airlines as a 49% minority shareholder in Virgin Atlantic, while Virgin Group will retain its 51% stake. Furthermore, Delta and Virgin Atlantic will enter into a fully integrated joint venture in order to bring together their passenger air transport operations on routes between the United Kingdom and North America.

The Commission's investigation confirmed that in all markets the now combined entity would continue to face competition from several strong competitors, notably AA, BA and United.

Simultaneously, the Antitrust Division of the US Department of Justice also:

- Stated that no further investigation or action was warranted with regards to competitive effects of both the acquisition and the joint venture;
- Indicated that it is still reviewing the airlines' application for antitrust immunity.

On 23 September 2013, the US Department of Justice finally issued a decision to approve and grant antitrust immunity to the joint venture on the North American-UK routes.

Delta Air Lines and Virgin Atlantic welcomed the decision and said that by combining Virgin Atlantic's Heathrow slots and the UK brand strength with Delta's US network, the joint venture will offer significant competition in the market and benefit consumers on both sides of the Atlantic.

Delta (DL) and Virgin Atlantic (VS) will operate the following combined New York (JFK)-London Heathrow schedule, beginning 30 March 2014:

[140] Non-opposition to a notified concentration(Case COMP/M.6828 — Delta Air Lines/Virgin Group/Virgin Atlantic Limited, Decision of 20/06/13, 2013/C 253/01, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:C2013/253/01&from=EN

Table 7.4: Delta and Virgin Atlantic routes beginning 30 March 2014

New York (JFK) – London (LHR)					London (LHR) - New York (JFK)				
Airport	Airline	Depart	Airport	Arrival	Airport	Airline	Depart	Airport	Arrival
JFK	VS	07:40	LHR	19:40	LHR	VS	09:05	JFK	11:50
JFK	VS	18:30	LHR	06:50*	LHR	DL	10:30	JFK	13:15
JFK	DL	19:00	LHR	07:20*	LHR	DL	11:30	JFK	14:25
JFK	VS	19:30	LHR	08:00*	LHR	VS	14:00	JFK	16:40
JFK	DL	20:30	LHR	08:45*	LHR	VS	16:05	JFK	19:05
JFK	VS	21:30	LHR	09:25*	LHR	DL	17:30	JFK	20:30
JFK	DL	22:30	LHR	10:40*	LHR	VS	20:05	JFK	23:00

*arrives the following day
Source: Mott MacDonald, OAG

With 7 direct return flights per day, Delta Air Lines and Virgin Atlantic will operate a total of 32 peak daily nonstop flights between North America and the UK, of which 24 flights will operate between London Heathrow and popular US destinations such as Los Angeles, San Francisco, Atlanta and Washington.

- **Mergers Blocked**

UPS / TNT Express (Case M.6570[141]):

On 15 June 2012, the Commission received a notification of a proposed concentration by which UPS acquires TNT Express by way of a public takeover offer under Dutch law.

UPS is a US-based global provider of specialized transport and logistics services. It is active in small package delivery services, air cargo, freight forwarding and contract logistics. TNT Express is based in the Netherlands and is active in the global logistics sector, where it provides small package delivery services, air and ground freight, freight forwarding and contract logistics.

Along with DHL and FedEx, UPS and TNT Express form the so-called four main "integrators"[142] currently operating in Europe.

On 20 July 2012 the Commission decided to initiate proceedings after finding that the notified concentration raised serious doubts as to its compatibility with the internal market. In parallel, DHL and FedEx lobbied against the deal being approved.

After receiving the Commission's statement of objections in October 2012, UPS revised its EUR 5.2 billion bid and submitted remedies in November 2012, December 2012 and 3 January 2013 (e.g. UPS proposed to divest TNT's subsidiaries in the 15 Member States in which competition issues were identified; UPS also offered access to its air network for 5 years for a "non-integrator" buyer; etc.).

[141] European Commission Case M.6570141UPS / TNT EXPRESS, at http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_6570

[142] Integrators are companies that control a comprehensive air and road small package delivery network throughout Europe and beyond and are capable of offering the broadest portfolio of such services.

UPS' goal was to strengthen its reach by bringing new operational mass to its delivery business outside Asia and the US. Moreover, the deal would have given UPS a European market-share similar to Deutsche Post AG (DPW)'s DHL, the region's top express operator at that time.

Finally, UPS had hoped that a plan to sell some of its assets, together with some TNT assets, could have created a new pan-European overnight-parcel-delivery competitor or integrator with the assets' proposed buyer being DPD, a parcel-delivery company.

On 30 January 2013, the Commission prohibited the proposed acquisition of TNT Express by UPS.

The Commission claimed that the take-over would have restricted competition in 15 Member States when it comes to the express delivery of small packages to another European country, because consumers – i.e. businesses which need to send small packages with guaranteed delivery on the next day - would in most cases only be able to choose between 2 (UPS and DHL) rather than 3 providers.

The Commission said that the merger between UPS and TNT Express would have likely harmed consumers by causing price increases.

Ryanair / Aer Lingus (Case M.6663[143]):

On 24 July 2012, the European Commission received a notification of a proposed concentration by which Ryanair would acquire control of the whole of its main competitor, Aer Lingus.

Aer Lingus, the Irish-based carrier offers essentially European point-to-point scheduled air transport services and some transatlantic services. It is not a member of any airline alliance and therefore is able to partner across alliances and offer connectivity through major hubs in Europe and the US to worldwide destinations in addition to carrying point-to-point traffic.

Ryanair is a low-fares carrier operating point-to-point scheduled air services essentially in Europe. The company has a fleet of 305 aircraft and 51 bases across Europe, with the most important bases being London Stansted, Brussels Charleroi, Milan Bergamo, and Dublin.

The fact that Ryanair and Aer Lingus have business models in Europe sharing similarities – they offer point-to-point connections and that they are the most important carriers operating out of Ireland – contributes to make them each other's closest competitor.

The newly proposed acquisition of Aer Lingus is a follow-up to the two previous failed attempts of Ryanair to acquire Aer Lingus (in 2007[144] and 2009[145]).

The Commission's preliminary investigation into the proposed takeover indicated possible competition concerns.

[143] European Commission's Case Page,http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=2_M_6663

[144] First prohibition; Ryanair maintains minority stake.

[145] Ryanair withdraws second bid.

On 29 August 2012, the Commission started an in-depth investigation into the proposed acquisition of Aer Lingus to determine whether the proposed transaction would significantly impede effective competition in the European Economic Area (EEA) or any substantial part of it.

The deadline for a decision was extended to assess the remedies submitted by Ryanair during the procedure (e.g. divestiture of Aer Lingus' operations on 43 overlap routes to Flybe, sale of take-off and landing slots to British Airways at London airports, and/or additional slot divestitures on London-Ireland routes).

On 27 February 2013[146], the Commission finally prohibited the takeover of Aer Lingus. Taking into account Ryanair's suggested remedies, considered insufficient[147]; the Commission stressed the importance of consumer protection pointing out that the merger would have (1) harmed consumers by creating a monopoly or a dominant position on 46 routes, (2) reduced consumers' choice, and (3) led to price increase for consumers travelling on these routes.

Moreover, the Commission believed that the strong market position of Ryanair and Aer Lingus, on flights to and from Ireland, can only constitute barriers to entry and exclude all new challenging entity on the Irish market.

State Aid

Due to the precarious financial situation of many flag carriers, particularly in Central, Eastern and South-Eastern Europe (CESE), several cases of approval of State aids were filed. The reasons for this increase in State aid investigations against airlines especially from CESE in the past few years are complex and multi-faceted. It became clear that it is extremely difficult for carriers in the region to develop a sustainable business models due to limited investment possibilities, strong competitors, divergent interests of the airlines and their governments.

In terms of investigations of alleged State aid and enforcement of State aid rules with regard to airports and airlines, an overview of the following important cases is provided. We will analyze, in this order, State aids implemented under restructuring and rescue aid, under State aid to airports, and finally under start-up aid to airlines.

- **Rescue and Restructuring State Aid - Developments in 2013 of Cases Closed in 2012**

Market Impact of the Malév Bankruptcy:

On 9 January 2012, the Commission found that financing granted to Hungarian flag carrier Malév between 2007 and 2010 constituted illegal aid, and ordered Hungary to recover the unlawful aid, i.e. EUR 400 million.

On 3 February 2012, Malév suspended its activities and was made bankrupt in view of its inability to repay State aids granted illegal and because no opportunity was given to Hungary to find a buyer. At the time it

[146] Summary of Commission Decisionof 27 February 2013declaring a concentration incompatible with the internal market and the EEA Agreement, (Case COMP/M.6663 — Ryanair/Aer Lingus III), http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013XC0730%2802%29&from=EN

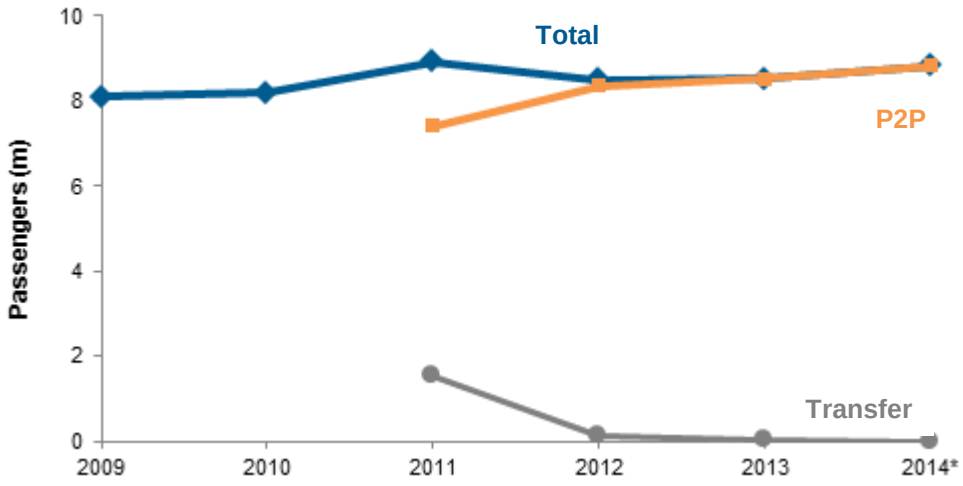
[147] Flybe: lack of directly relevant experience, weak brand and different business modal; IAG: would not constraint the merged entity due to its different business model.

was made bankrupt, Malév served 50 cities in 34 countries in Europe and in the Middle East with a fleet of 21 aircraft. Malév had its headquarters in Budapest-Franz Liszt Airport (BUD).

Following the Malév bankruptcy, passenger traffic at Budapest Airport decreased by 4.7% (from 8.9 million to 8.5 million passengers). The Hungarian capital airport handled a total of 8.5M departing and arriving passengers in 2012, 5% less than in 2011. Direct connectivity to international destinations from BUD was lost.

This limited decrease in the total number of passengers is the result of the very swift reactions by other airlines to fill the gap in the market. Within 72 hours of Malév's bankruptcy, Lufthansa launched flights from Hamburg and Berlin to Budapest, whilst Air Berlin conducted its first flight to Budapest from Berlin. On the day of the Malév bankruptcy, Wizz Air and Ryanair announced the launch of nearly forty new routes. A large number of new airlines also appeared in Budapest in 2012, namely Aegean Airlines (Greece), Brit Air (France), Transavia (Holland) and Blue 1 (Finland).

Figure 7.1: Budapest passengers per year by type



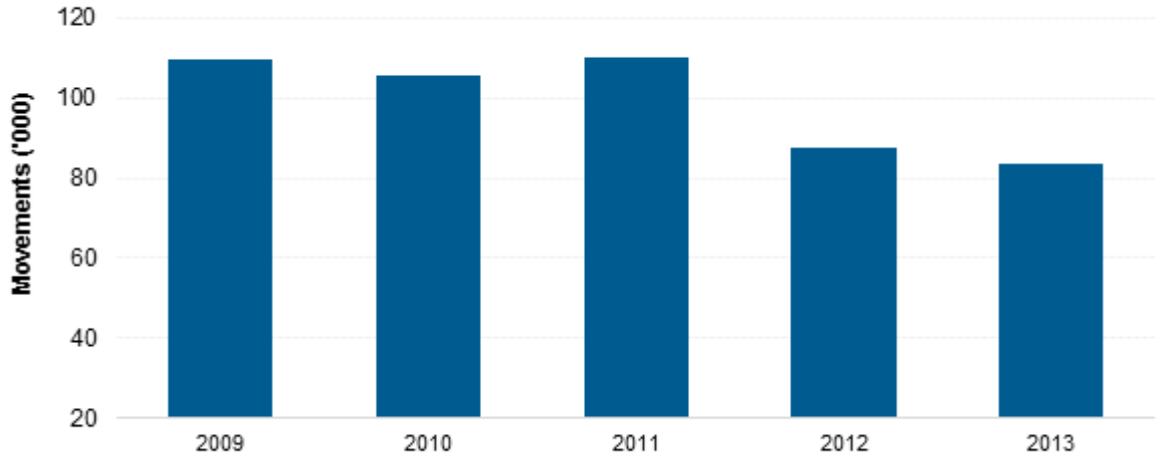
*2014 = Forecast data by Budapest Airport CEO
P2P = Point-to-Point, Transit = Passengers connecting at Budapest Airport
Source: Mott MacDonald, Budapest Airport

The above chart reveals that, following Malév's bankruptcy, Budapest airport lost nearly all its transfer passengers. In 2013, Budapest Airport handled 8.5 million passengers, which represents a flat growth of 0.2% compared to 2012. According to current forecasts, Budapest Airport's CEO expects traffic to grow by 3-4% in 2014.

Following the Malév bankruptcy in early 2012, the decline in aircraft movements at Budapest was much more dramatic, falling year-on-year by 20% in 2012 to 88 thousand, and by 5% in 2013 to 83 thousand. Load factors on the other hand improved both for low cost carriers (from 80% to 82%) and full services carriers (from 68% to 72%). Average aircraft size increased at the airport, which also helped limit passenger reductions. The decrease in the number of movements has not, however, resulted in great financial consequences for Budapest's airport, with a EUR 104 million EBITDA in 2011 reduced to a EUR 100 million EBITDA in 2012 after the Malév bankruptcy.

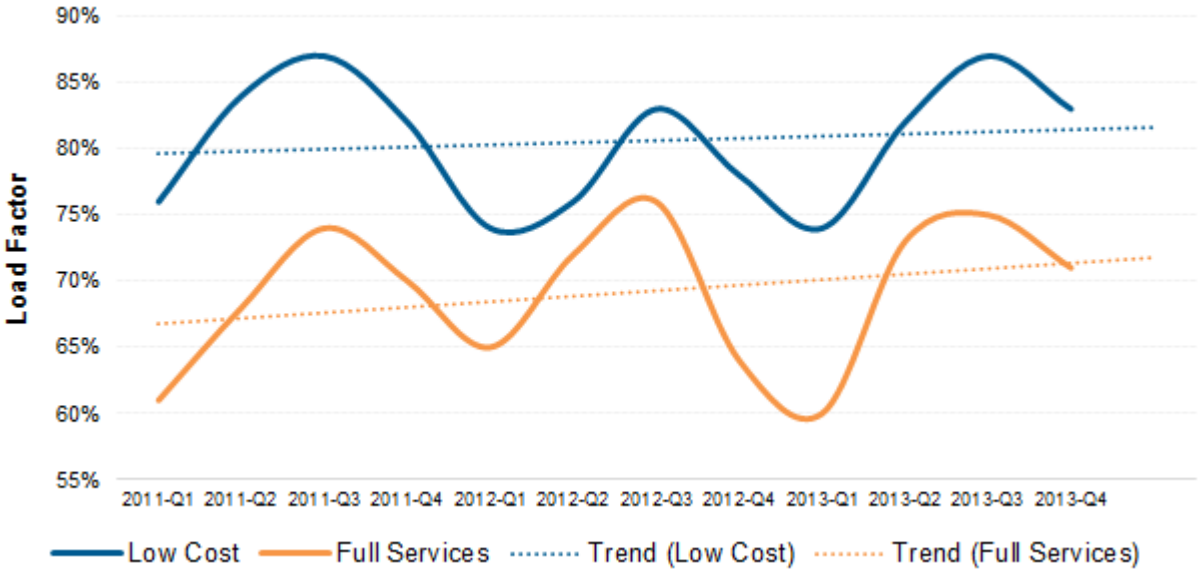
Following the Malév bankruptcy, there was a significant rearrangement in the airline market at Budapest airport. The low cost carriers increased their market shares from 26% (2011) to 53% of overall traffic in 2013, with full services carriers reduced to 42% of the market, and charter flights having 4% of the market share.

Figure 7.2: Decrease in aircraft movements at Budapest Airport



Source: Budapest Airport BUD Key Highlights 2012-2013

Figure 7.3: Load factor growth at Budapest airport



Source: Hungarian central statistical office

Successful Privatization for Czech Airlines (CSA):

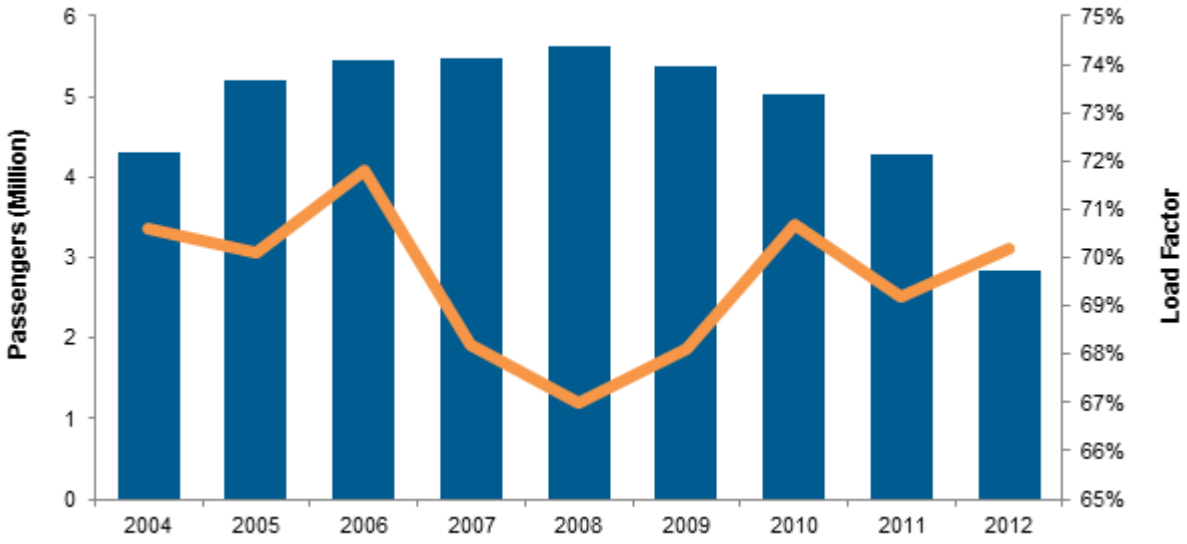
On 19 September 2012, after an in-depth investigation, the Commission approved CSA's restructuring plan and concluded that restructuring aid amounting to EUR 100 million is in line with the requirements of the 2004 EU Rescue and Restructuring (R&R) Guidelines[148]. The restructuration plan spanned from August 2009 until June 2014 and aimed to restore CSA's long-term viability by 2014.

In preparation for the planned privatization, the Czech Republic government decided to create a new corporate structure under the umbrella of Cesky Aeroholding, aiming to find a strategic partner for CSA at the latest by November 2013.

The restructuring plan aimed also to reduce the fleet by 50%, decreasing the total capacity from 8.0-9.0 billion ASKs[149] in 2009 to 6.2-7.0 billion ASKs at the end of the restructuring process, a reduction representing 20-25% of the total capacity.

The graph below confirms that between 2009 and 2012 CSA significantly reduced its fleet and capacity. During that period, the number of transported passengers reduced by 47% whilst load factors improved from 68.1% (2009) to 70.2% (2012), as the carrier utilized smaller aircraft.

Figure 7.4: CSA Czech Airlines Traffic 2004-2012



Source: Mott MacDonald, anna.aero

In 2012, CSA received expressions of interest from private investors, including from Qatar Airways and Korean Air. Finally, on 13 March 2013, the government of Czech Republic approved the sale of 461 thousand shares of Czech Airlines, representing a 44% stake in the company, to Korean Air. The contract also includes a pre-emptive right to the purchase of the remaining shares from Cesky Aeroholding.

[148] EC Decision of 19.09.2012, C(2012) 6352, http://ec.europa.eu/competition/state_aid/cases/239781/239781_1369871_444_6.pdf

[149] « Available Seat Kilometres: the measure of a flight's passenger carrying capacity. Calculated by multiplying the number of seats on an aircraft by the distance travelled in kilometres. Used to measure an airline's capacity to transport passengers » - http://centreforaviation.com/about-capa/glossary/

Through this purchase, Korean Air plans to use its ties with CSA to make Prague one of its European hubs. Under the strategy, CSA would take care of transporting transfer passengers within Europe, resulting in increased use of CSA's capacity and the potential development of Prague Airport as a transit point. Korean Air also aims to develop CSA's long-distance transport capabilities, which quickly materialized in summer 2013 through CSA's return on the long-haul market between Prague and Seoul.

On 5 December 2013, the privatization process continued: Korean Air exercised its pre-emptive right to buy an additional 34% stake in CSA and sold it to the Czech privately-held charter air company Travel Service, which thus became the second biggest shareholder in CSA, behind Korean Air who keeps 44%. Following the transaction, Cesky Aeroholding keeps a 19.7% share in CSA whilst the remaining 2.3% will stay in the hands of insurer Ceska Pojistovna.

By the entry of domestic Travel Service, CSA neither loses the status of a Czech national air carrier, nor the right to operate to countries with a limited number of air carriers (for example to Russia) or the ability to benefit from the European Union Open Sky agreements.

- Moreover, the entry of Travel Service into CSA adds charter flights to the portfolio of services provided by CSA, and provides Korean Air with connections to approximately 40 new destinations in Europe to which their passengers will be able to fly without a transfer at Vaclav Havel Airport in Prague (PRG).

- **Investigations Finalized in 2013**

Rescue Aid for LOT Polish Airlines[150]:

A good example of a large State-owned airline going through a restructuring process in the CESE is LOT Polish Airlines. In 15th of May 2013, the European Commission adopted the decision that a rescue loan of PLN 400 million (around EUR 100 million) granted by the Polish government to LOT Polish was in line with the R&R Guidelines on the rescue and restructuring of companies in difficulties. The Commission concluded that the aid was limited in time and scope and approved it temporarily, until it could take a position on the final restructuring plan which had to be submitted by Poland by 20 June 2013.

- **Investigations Opened/Ongoing in 2013**

Adria Airways[151]:

On 20 November 2012, the Commission opened an in-depth investigation to verify whether a number of public support measures in favor of the Slovenian airline Adria Airways are in line with EU State aid rules.

The in-depth investigation is focusing on:

[150] European Commission, State aid SA.35900 (2013/NN) – Poland

- Rescue Aid for LOT Polish Airlines,

at http://ec.europa.eu/competition/state_aid/cases/247313/247313_1444251_207_2.pdf

[151] European Commission's Case Page,http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_32715

- Four capital injections in 2007, 2009, 2010 and 2011, amounting to approximately EUR 85.5 million, provided either directly from the Slovenian State or through State-owned companies;
- The acquisition of Adria Airway's subsidiary Adria Airways Tehnika by State-owned companies between October 2010 and March 2011[152].

The graph below indicates:

- The changes in Adria Airways' Net Result;
- When, according to the R&R Guidelines, Adria Airways may be considered to be a company in difficulty;
- The State aids which Adria Airways benefited from;
- The entry into force of the Adria Airways' restructuring plan.

In its opening decision, the Commission finds that, in view of the nature of the measures at issue and of the fact that Adria could be considered a firm in difficulty at the time of the granting of the measures, it appears that the compatibility of the measures can only be assessed under Article 107(3)(c) Treaty on the Functioning of European Union (TFEU), and in particular in the light of the Rest and Recuperation (R&R) Guidelines.

Figure 7.5: Adria Airways: Timeline

Source: Mott MacDonald, EC Decision of 20.11.12, C(2012) 8231, JOCE C/69/2013

airBaltic[153]:

[152] EC Decision to initiate the formal investigation procedure of 20.11.2012, C(2012) 8231, JOCE C/69/2013, http://ec.europa.eu/competition/state_aid/cases/246721/246721_1403670_54_2.pdf

[153] European Commission's Case Page,http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_34191

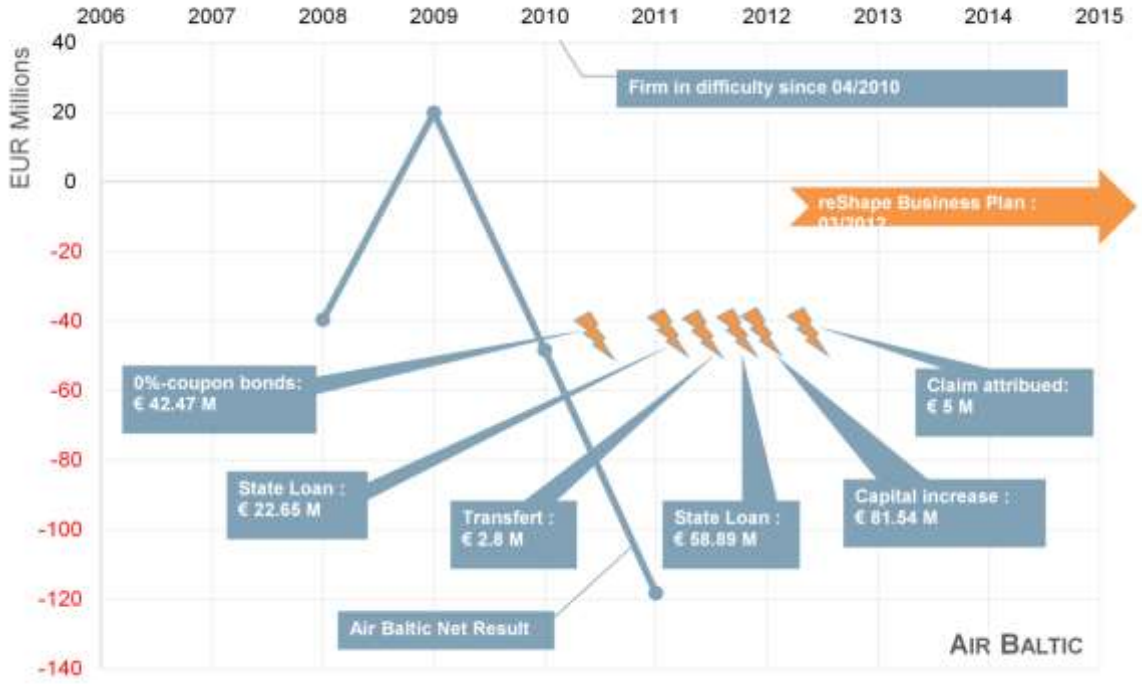
On the same date, 20 November 2012, the Commission opened another in-depth investigation, on this occasion to verify whether various public support measures provided by Latvia in favor of the majority State-owned airline airBaltic are in line with EU State aid rules[154].
These measures include:

- Two loans granted by Latvia in October 2011 (approx. EUR 22.65 million) and in December 2011 (approx. EUR 58.89 million);
- A capital increase agreed in December 2011 by Latvia and BAS, a former private majority shareholder of airBaltic, through loan conversion and a cash contribution from BAS;
- The acquisition by Latvia and BAS of 0%-coupon bonds issued by airBaltic in 2010;
- And, several transfers and payments made on behalf of and/or to the benefit of airBaltic by a nationalized bank, as well as a transfer to airBaltic of a claim held by Latvia in exchange of just LVL 1.

The graph below indicates:

- The changes in airBaltic's Net Result;
- When airBaltic may be considered to be a company in difficulty within the meaning of the R&R Guidelines;
- The different aids airBaltic benefited from;
- And the entry into force of airBaltic's restructuring plan.

Figure 7.6: Air Baltic Timeline



Source: Mott MacDonald, EC Decision of 20.11.12 C(2012) 8256, JOCE C/69/2013

[154] EC Decision to initiate the formal investigation procedure of 20.11.2012, C(2012) 8256, JOCE C/69/2013, http://ec.europa.eu/competition/state_aid/cases/246722/246722_1401154_69_3.pdf

In its opening decision, the Commission finds that, in view of the nature of the measures and of the difficulties of airBaltic, the only relevant criteria appear those concerning aid for rescuing and restructuring firms in difficulty under Article 107(3)(c) TFEU on the basis of the R&R Guidelines.

Cyprus Airways[155]:

On 6 March 2013, the Commission opened an in-depth investigation into:

- A capital increase by Cyprus Airways, to which the Cypriot State has contributed EUR 31.3 million, whereas private participation was minimal;
- A rescue aid loan of EUR 73 million for Cyprus Airways granted in December 2012;
- And an *ex gratia* compensation provided by the Cypriot State to redundant personnel of Cyprus Airways, in addition to what they are entitled under the Cypriot law[156].

In its opening decision, the Commission notes that these measures could violate the "one time last time" principle since Cyprus Airways had already received rescue and restructuring aid in 2007[157].

The graph below indicates:

- The changes in Cyprus Airways' Net Result;
- When Cyprus Airways may be considered to be a company in difficulty within the meaning of the R&R Guidelines;
- The different aids Cyprus Airways benefited from;
- And the entry into force of Cyprus Airways' restructuring plan.

On 23 October 2013, the Cypriot State notified the Commission a EUR 102.9 million aid package to restructure Cyprus Airways. The restructuring plan runs from 2012 to 2017. The plan includes:

- The EUR 31.3 million capital injection granted in 2012;
- A conversion of debts-to-equity amounting to EUR 63 million (rescue aid);
- EUR 8.6 million to cover the deficit of the company's Provident Fund scheme;
- And, a benefit scheme for the Cyprus-based employees.
-

On 4 February 2014, the European Commission opened an in-depth investigation to verify whether Cyprus' plans to support the restructuring of Cyprus Airways with EUR 102.9 million are in line with EU state aid rules[158].

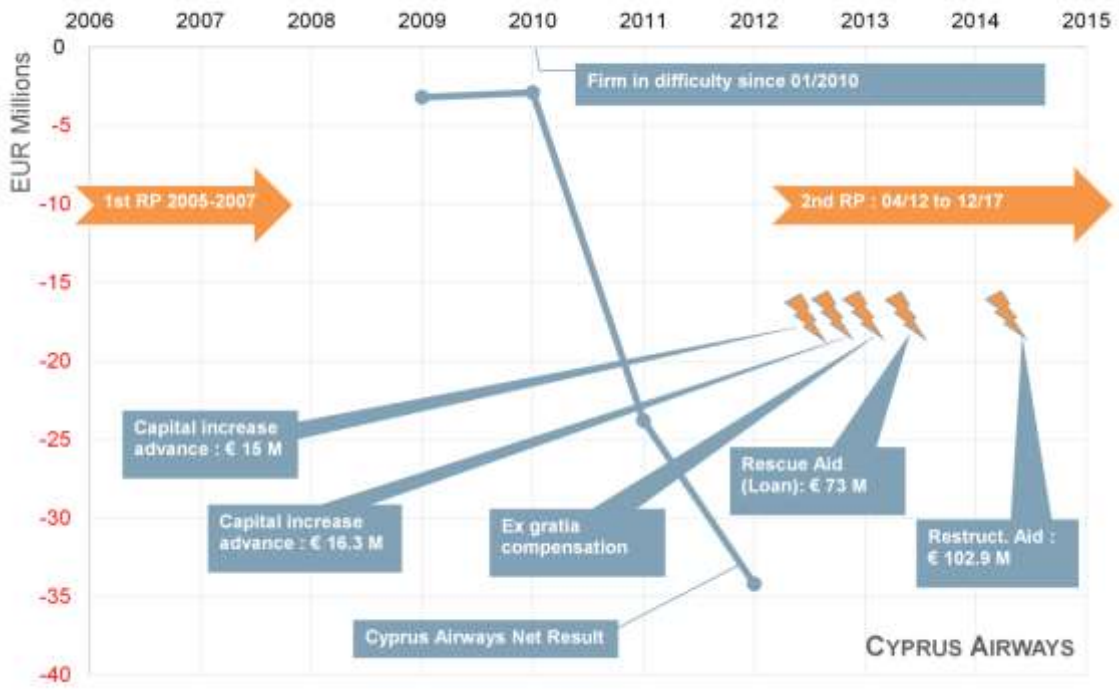
[155] European Commission's Case Pages,http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_35888 (Rescue Aid); http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_37220 (Restructuring Aid)

[156] EC Decision to initiate the formal investigation procedure of 06.03.2013, C (2013)1163, JOCE C/152/2013, http://ec.europa.eu/competition/state_aid/cases/247909/247909_1418834_24_2.pdf

[157] EC Decision of 07.03.2007, JOCE L/49/2008, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008D0137&from=EN

[158] EC Decision to initiate the formal investigation procedure of 04.02.2014, C(2014) 470, http://ec.europa.eu/competition/state_aid/cases/251734/251734_1523566_55_2.pdf

Figure 7.7: Cyprus Airways: Timeline



Source: Mott MacDonald, EC Decision of 06.03.13, C (2013)1163, JOCE C/152/2013; EC Decision 04.02.14, C(2014) 470

LOT Polish Airlines*[159]*:

As it has already been stated above, on 20 November 2012, after examination of the conditions of the transactions, the Commission has concluded that the sale of LOT Services, LOT Catering and LOT Airport Maintenance Services, subsidiaries of LOT Polish Airlines, was carried out on market terms and did therefore not involve State aid in the meaning of EU rules[160].

On 14 December 2012, Poland notified to the Commission a rescue loan of PLN 400 million (around EUR 100 million) in favor of LOT. The aid had been paid to the Company on 20 December 2012.

On 15 May 2013, the Commission concluded that this short-term loan was in line with EU state aid rules and approved it temporarily, until it can take a position on the restructuring plan to be submitted by Poland by 20 June 2013[161].

The graph below indicates:

- The changes in LOT Polish Airlines ' Net Result;

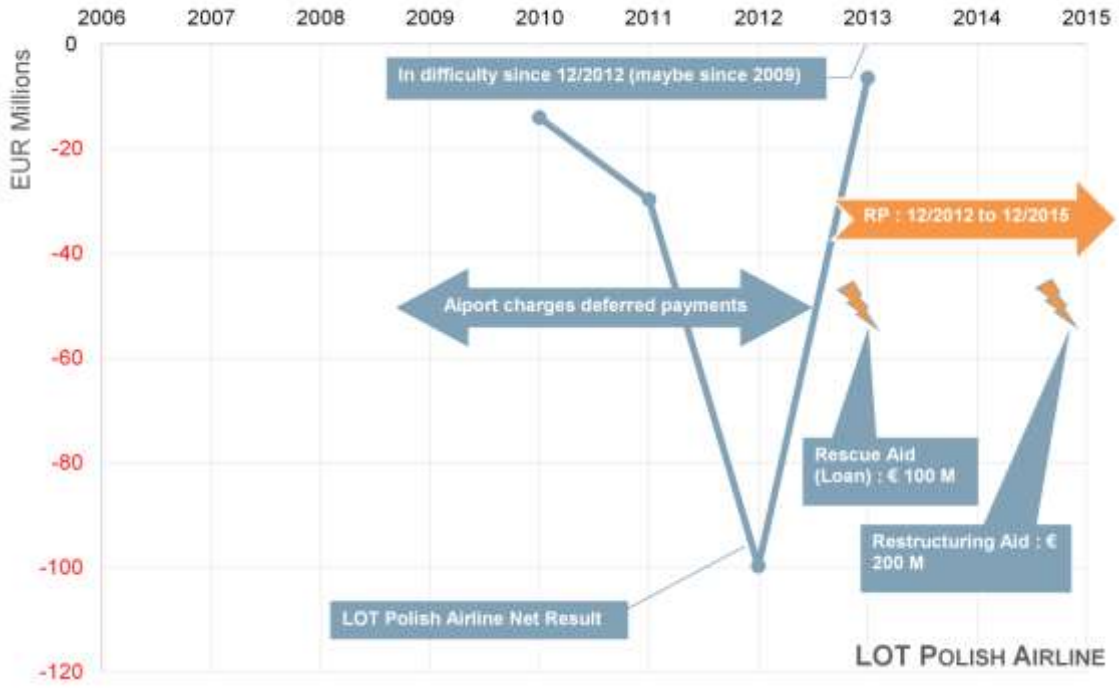
[159] European Commission's Case Page,http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_35900 (Rescue Aid); http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_36874 (Restructuring Aid)

[160] EC Decision of 20.11.2012, C(2012) 8212, JOCE C/81/2013, http://ec.europa.eu/competition/state_aid/cases/246202/246202_1410483_70_2.pdf

[161] EC Decision of 15.05.2013, C(2013) 2747, JOCE C/204/2013, http://ec.europa.eu/competition/state_aid/cases/247313/247313_1444251_207_2.pdf

- When LOT Polish Airlines may be considered to be a company in difficulty within the meaning of the R&R Guidelines;
- The different aids LOT Polish Airlines benefited from;
- And the entry into force of LOT Polish Airlines' restructuring plan.

Figure 7.8: LOT Polish Airlines Timeline



Source: Mott MacDonald, EC Decision of 20.11.2012, C(2012) 8212, JOCE C/81/2013, EC Decision of 15.05.2013, C(2013) 2747, JOCE C/204/2013, EC Decision of 06.11.2013, C(2013) 7044, JOCE C/37/2014

On 20 June 2013, Poland notified the Commission a PLN 804.29 million (approx. EUR 200 million) capital increase to help the cash-starved LOT Polish finance the restructuring. The underlying restructuring plan covers a two and a half year restructuring period and aims at restoring viability by 2015.

On 6 November 2013, the Commission has opened an in-depth investigation[162].

Estonian Air[163]:

In December 2012, Estonia notified to the Commission its plan to grant a rescue loan of EUR 8.3 million to Estonian Air, which has recorded substantial losses since 2006.

On 20 February 2013, the Commission opened an in-depth investigation into a number of public support measures granted by the government of Estonia in favor of Estonian Air. The Commission has doubts that

[162] EC Decision of 06.11.2013 to initiate the formal investigation procedure, C(2013) 7044, JOCE C/37/2014, http://ec.europa.eu/competition/state_aid/cases/250550/250550_1505256_73_4.pdf

[163] European Commission's Case Page,http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_35956 (Rescue Aid); http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_36868 (Restructuring Aid)

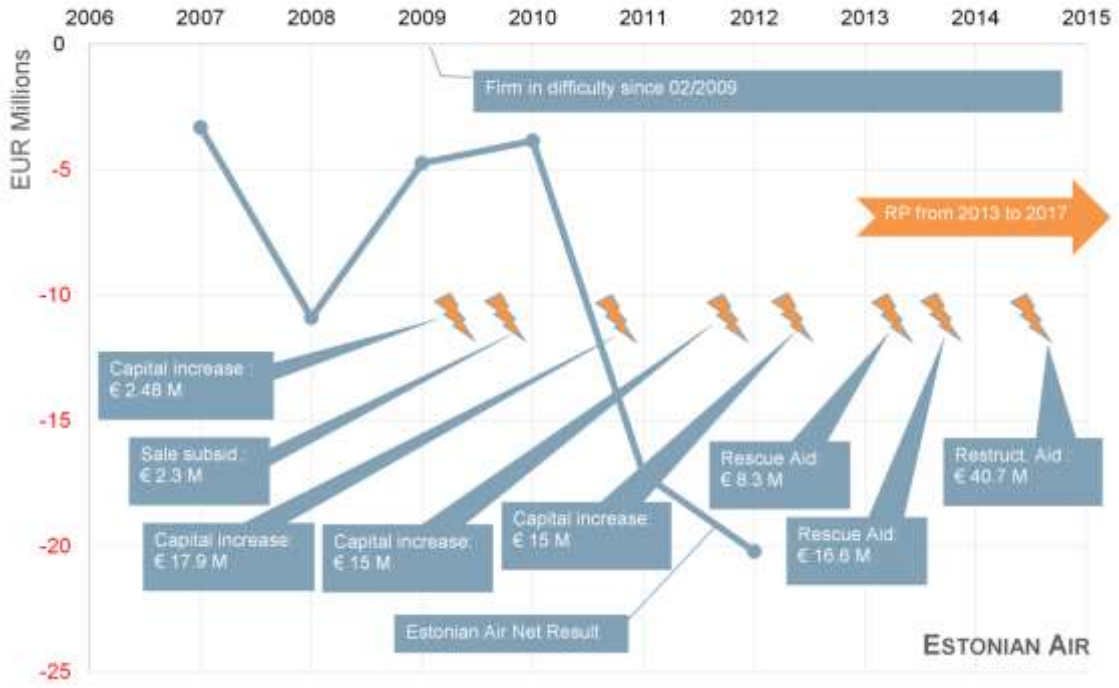
the rescue loan for Estonian Air is in line with the provisions of the R&R Guidelines since Estonian Air already benefitted from three capital injections of EUR 7.3 million (in 2009), EUR 19.9 million (in 2010) and EUR 30 million (in 2011-2012)[164].

On 16 April 2013, the Commission extended the scope of the in-depth investigation opened in February 2013 to include the decision by the Estonian state, on 28 February 2013, to increase the rescue loan by EUR 28.7 million[165].

The graph below indicates:

- The changes in Estonian Air's Net Result;
- When Estonian Air may be considered to be a company in difficulty within the meaning of The R&R Guidelines;
- The different aids Estonian Air benefited from;
- And the entry into force of Estonian Air's restructuring plan.

Figure 7.9: Estonian Air Timeline



Sources: Mott MacDonald, EC Decision of 20.02.13, C (2013) 775, JOCE C/150/2013; EC Decision of 16.04.13, JOCE C/150/2013; EC Decision of 04.02.2014 to initiate the formal investigation procedure

In June 2013, Estonia notified the Commission a EUR 40.7 million recapitalization loan to Estonian Air to help restructure the company. The restructuring plan covers a five year restructuring period from 2013 to 2017. On 4 February 2014, the Commission opened an in-depth investigation to verify whether this plan of

[164] EC Decision of 20.02.2013 to initiate the formal investigation procedure, C (2013) 775, JOCE C/150/2013, http://ec.europa.eu/competition/state_aid/cases/247780/247780_1426512_104_2.pdf

[165] EC Decision of 16.04.2013 to extend proceedings, JOCE C/150/2013, http://ec.europa.eu/competition/state_aid/cases/247780/247780_1425152_79_2.pdf

Estonia to grant EUR 40.7 million State aid for the restructuring of Estonian Air is in line with EU State aid rules[166].

SAS new Revolving Credit Facility[167]:

Another complex in-depth investigation was opened by the European Commission in June 2013 for verifying whether a public support measure granted in 2012 by Sweden and Denmark to Scandinavian Airlines (SAS) is in line with EU State aid rules. In this respect a revolving credit facility (RCF) which was granted in the past to SAS by a number of banks, was replaced by a new RCF of SEK 3.5 billion (around EUR 400 million). Half of the new RCF was provided by Sweden, Denmark and Norway in proportion to their shareholding and the remaining 50% by most of the banks that participated in the previous RCF and the Knut and Alice Wallenberg foundation (KAW). The Commission has concerns whether the new RCF was carried out on market conditions, and whether the business plan on the basis of which the public shareholders decided to participate in the new RCF, is reliable.

7.3.2 Procedural Aspects of Ongoing Investigations

Compliance with the obligation of notification

The preceding developments demonstrate that some of the concerned States have failed to comply with their obligation to notify recue aids and/or restructuring aids granted to their national air carrier.

Rescue aids granted to Cyprus Airways, to LOT Polish and to Estonian Air have been the subject of prior notification on 13 December 2012, 14 December 2012 and 20 December 2012, respectively. Similarly, restructuring aids granted to Cyprus Airways, to LOT Polish and to Estonian Air have been notified to the Commission on 23 November 2013, 20 June 2013 and 20 June 2013, respectively.

In all three cases, it was on the basis of prior notification that the Commission opened an in-depth inquiry on the State aids envisaged or granted, as it was the case for Air Malta and CSA Czech Airlines.

Adria Airways' and airBaltic's cases are different. For the first time, Slovenia did notify a rescue aid on 11 March 2011 before withdrawing the notification on 1 August 2011. As for airBaltic, no notification was addressed to the Commission by the Latvian authorities.

In both cases, the formal investigation procedure was opened *ex officio* by the Commission on 20 November 2012 (for the two carriers).

The investigation's scope

Despite the fact that the notified aids were rescue and restructuring aids, the investigation opened by the Commission vis-à-vis Cyprus Airways, LOT Polish and Estonian Air also covers other measures granted during the months preceding the notifications.

Regarding Cyprus Airways, it concerns a capital increase of EUR 31.3 million granted in February 2012 (on which the Commission had opened an investigative procedure *ex officio*) and a planned *ex gratia*

[166] EC Decision of 04.02.2014 to initiate the formal investigation procedure

[167] European Commission, SA.29785 (2013/NN) (ex CP 361/2009) – Denmark/Sweden "Core SAS" – Rights issue for SAS; SA.35668 (2013/C) (ex 2013/NN) (ex 2012/CP) – Denmark/Sweden, SAS new Revolving Credit Facility; SA.36327 (2013/NN) (ex 2013/CP) – Denmark/Sweden, Alleged aid to SAS, at http://ec.europa.eu/competition/state_aid/cases/249053/249053_1461974_61_2.pdf

compensation by the Cypriot authorities to the Cyprus Airways personnel, which will be considered redundant in the context of the company's restructuring.

Regarding LOT Polish, it is a matter of deferral of payment granted by Polish airports to LOT from 2009 to 2012 to the amount of EUR 320-390 million.

Regarding Estonian Air, the aid consists of capital injections of EUR 7.3 million (in 2009), EUR 19.9 million (in 2010) and EUR 30 million (in 2011-2012).

Respect of the «standstill» clause

Moreover, the ongoing inquiries confirm that the « standstill »[168] clause is rarely complied with.

Regarding notified rescue aids, neither Cyprus Airways, nor LOT Polish or Estonian Air have complied with the « standstill » principle since the notified aids were partially (in Cyprus Airway's and Estonian Air's cases) or fully paid (LOT). Amongst the studied cases, only Air Malta has complied with the « standstill » principle, but this is probably explained by the fact that the Commission approved after only 12 days the notified recue aid.

Regarding restructuring aids, the details published only allow us to believe that LOT Polish complies with this obligation at the present time, as Air Malta did previously. No information in available on that matter and with regards to restructuring aids notified by Cyprus Airways and Estonian Air.

The table below analyzes the different stages of the procedure and the show us if the standstill obligation was respected by the concerned companies regarding recovery aid as well as restructuring aid.

The table also highlights the time required for approval.

Table 7.5: Summary and comparison of procedures

	Czech Airlines	Air Malta	Adria Airways	airBaltic	Cyprus Airways	LOT Polish	Estonian Air	
Rescue Aid (Re)	No	Yes	Yes	No	Yes	Yes	Yes	
Date of Notification Re to EC		03.11.10	11.03.11		13.12.12	14.12.12	20.12.12	04.03.13
Amount Re (EUR)		52 M	6.2 M		73 M	100 M	8.3 M	28.7 M
In-depth investigation start date		No	Withdrew 01.08.11		06.03.13	No	20.02.13	16.04.13
Approbation Re by EC		15.11.10			Ongoing	15.05.13	Ongoing	Ongoing
Respect standstill obligation		Yes			No, paid 31.3 M	No, paid 100 M	No, paid 8.3 M	No, paid 16.6 M
Restructuring Aid (Rg)	Yes	Yes	Probably for EC	Probably for EC	Yes	Yes	Yes	
Date of Notification Rg to EC	12.05.10	16.05.11	No	No	22.07.13	20.06.13	20.06.13	
Amount Rg (EUR)	105 M	130 M	100.2 M	213.4 M	102.9 M	195 M	40.7 M	
In-depth investigation start date	23.02.11	25.01.12	20.11.12	20.11.12	04.02.14	06.11.13	04.02.14	
Approbation Rg by EC	19.09.12	27.06.12	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	

[168] The standstill obligation means that Member States may not implement aid measures until they have been declared compatible with the Treaty (see Article 3 of Council Regulation (EC) No 659/1999 of 22 March 1999 laying down detailed rules for the application of Article 93 of the EC Treaty - now Article 108).

	Czech Airlines	Air Malta	Adria Airways	airBaltic	Cyprus Airways	LOT Polish	Estonian Air
Respect standstill obligation	No, paid 30.06.10	Yes	No	No	Unknown	Yes	Unknown

Source: EC Decisions

7.3.3 Assessment of the Rescue and Restructuring Aid Guidelines' Criteria

Company in Difficulty

Pursuant to points 10 and 11 of the R&R Guideline,[169] the Commission has already considered – when the formal investigative procedures were opened – that the carriers can be considered as undertakings in difficulty at the time the measures identified were provided or at least since:

- Adria Airways: at the beginning of 2008;
- airBaltic: April 2010;
- Estonian Air: at the beginning of 2009;
- Cyprus Airways: at the beginning of 2010;
- LOT Polish Airlines: on December 2012.

During its assessment, the Commission noted that none of the carriers were showing profits since the financial year of 2008, or even since 2007 (LOT Polish) or 2005 (Estonian Air).

Similarly, the Commission considered that this criterion had been met in Air Malta's case since March 2009 and in Czech Airline's case since early August 2009.

Avoidance of Undue Distortion of Competition

Amongst published documents regarding the 5 cases under investigation, only the ones with regards to LOT Polish give some indication in terms of remedies.

In particular, LOT's restructuring plan includes a fleet reduction of 34%, a capacity reduction of 13.5% to 16.5% in terms of ASKs, the suppression of 19 profitable routes and a frequency reduction on 5 other profitable routes. This proposal of LOT Polish may be compared to the remedies taken into account by the Commission in Air Malta (AMC) and Czech Airline's (CSA) cases, with regards to the respective market share of each carrier.

[169] Communication from the Commission - Community guidelines on state aid for rescuing and restructuring firms in difficulty, Official Journal C 244 of 1.10.2004, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52004XC1001%2801%29:EN:HTML

Table 7.6: Comparison between remedies suggested by LOT and remedies accepted in Air Malta's (AMC) and Czech Airlines' (CSA) cases.

	AMC	CSA	LOT
EU Aviation market share	0.25%	1% / 2%	1%
Capacity reduction (ASK)	-20.9%	-21% / -24%	-13.5% / -16.5%
Downsizing of the fleet	-17%	-50%	-34%
Reduction of the staff	-430	-1000	-833
Route profitable (cancel./reduction)	-14	-6 / -10	-19 / -5
Release of slots at coordinated airport(s)	Yes	Yes	No

Source: EC Decision of 27.06.12, JOCE L/301/2012; EC Decision of 19.09.12, JOCE L/92/2013; EC Decision of 06.11.13, JOCE C/37/2014

Aid Limited to the Minimum Own Contribution

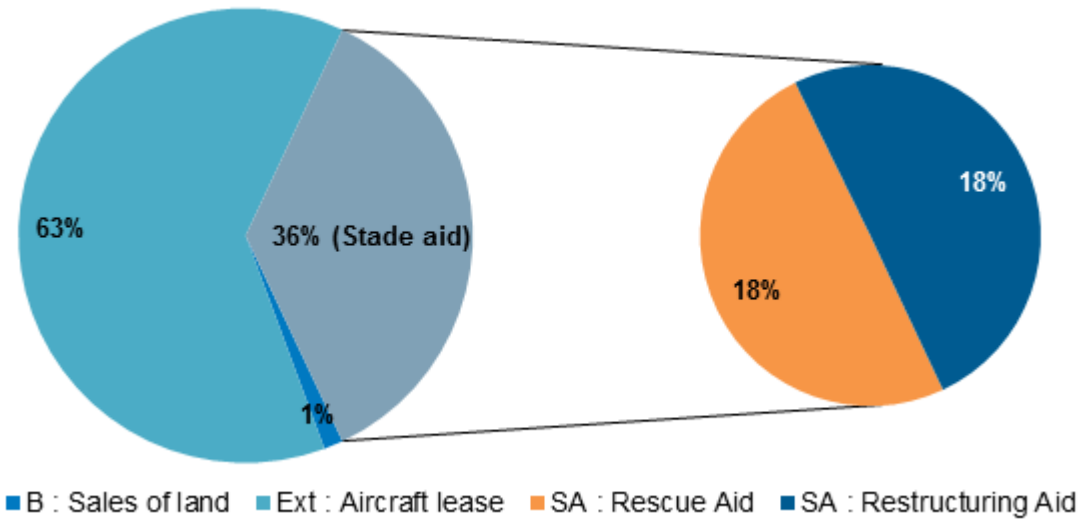
Regarding own contribution, only LOT's case presents relevant information at the moment.

It can be concluded that LOT's own contribution amounts to around 64% of its restructuring costs (+/- EUR 550 million) and that it consists of the sale of Lands (more or less 1%t of the total Restructuring Aid (Rg)) and of a financial leasing granted in view of the renewal of LOT's fleet (the remaining 63% of the Rg).

At this point, the Commission is considering the possibility to consider a financial leasing as own contribution, the Commission has a potential precedent in the CSA case (but to a lesser extent since the leasing only accounted for roughly 5% of CSA's restructuring costs).

The charts below allow us to make a useful comparison between the composition of the own contribution of LOT, Air Malta and CSA regarding the bearing of restructuring costs.

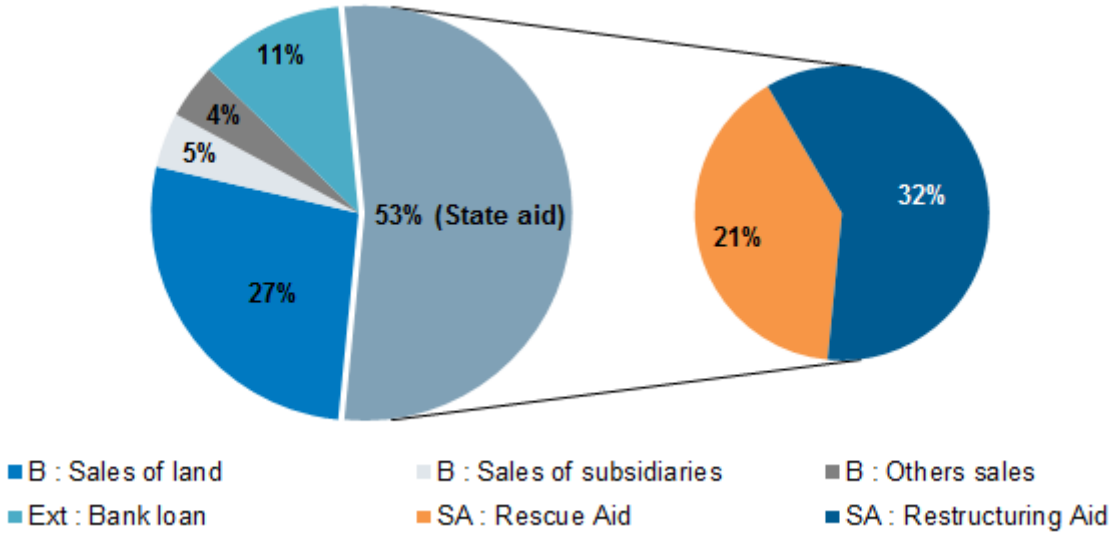
Figure 7.10: LOT Polish airlines: own contribution – state aid



Source: Mott MacDonald, EC Decision of 06.11.13, JOCE C/37/2014

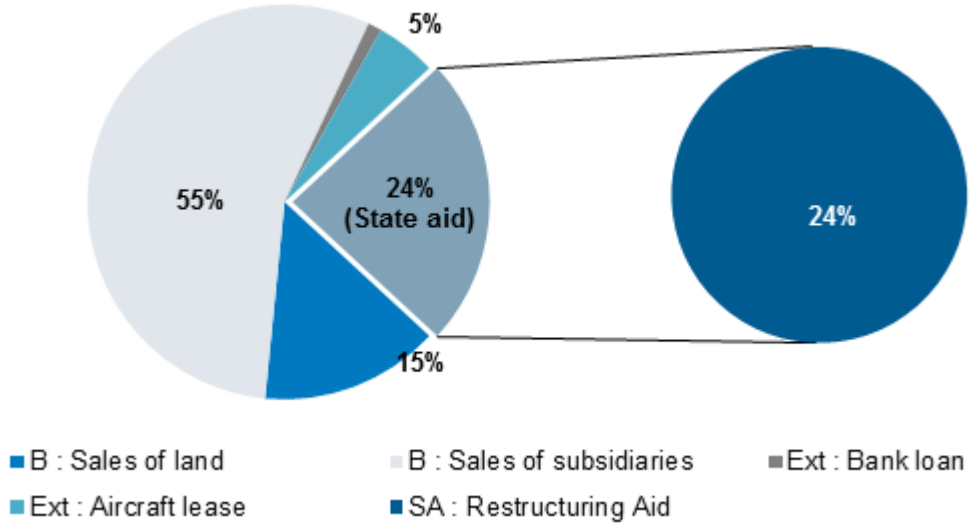
Note: Own contribution (B) is composed of the own contribution of the company which benefited from the aid - e.g. sale of subsidiaries or sale of lands - and of external own contribution (EXT), which is generally composed of bank's or shareholders' contribution. The abbreviation « SA » stands for « State Aid ».

Figure 7.11: Air Malta: own contribution – state aid



Source: Mott MacDonald, EC Decision of 27.06.12, JOCE L/301/2012

Figure 7.12: CSA Czech airline: own contribution – state aid



Source: Mott MacDonald, EC Decision of 19.09.12, JOCE L/92/2013

The “one time last time” Principle

Most of the cases under investigation raise serious questions about compliance with the « one time last time » principle, and in particular:

- In the cases of Adria Airways and Estonian Air, because both carriers have been the subject of repeated capital increase from 2007 to 2011 and from 2009 to 2012, respectively, although both carriers were in difficulty within the meaning of the Guidelines and no restructuring plan had been put into place;
- In the case of Cyprus Airways, because this carrier received compatible restructuring aid in 2007 on the basis of a previous restructuring plan;
- And, in the case of LOT Polish, because the Commission pointed out – after Ryanair lodged a complaint – that LOT had benefited from an important deferral of payment in terms of airport charges due to the state-owned company PPL Polish Airport.

In case the Commission would consider that these repeated State interventions constituted illegal State aids, its conclusion may be – as it was the case for Malév – that the carriers were in continuous restructuring and that the grant of aids at issue infringes the « one time last time » principle.

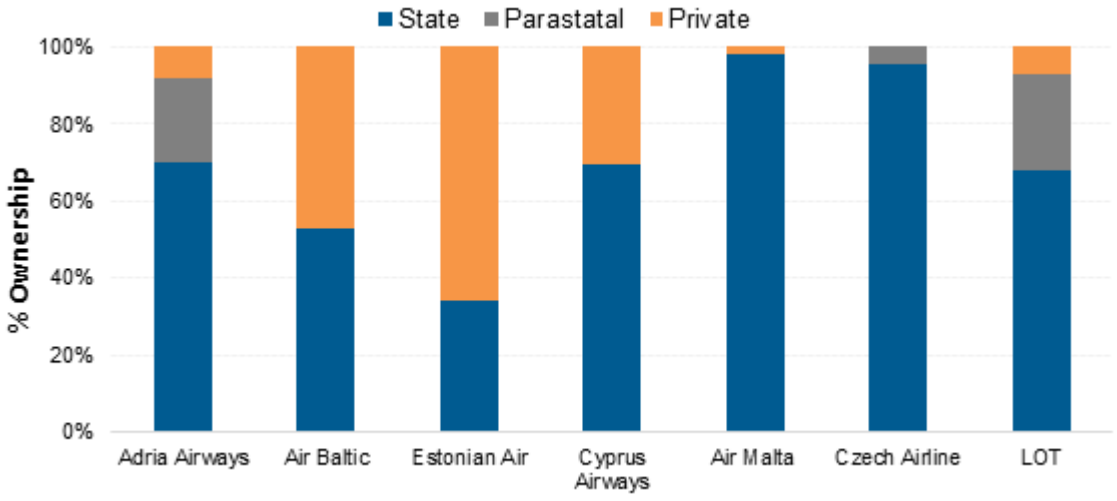
Other Considerations

The ongoing investigations point to changes in shareholding of the carriers under restructuring with a stronger State presence in terms of capital, with the exception of CSA Czech Airlines, which successfully reached privatization at the end of its restructuring.

Shareholders before restructuring

With the exception of Air Malta and Czech Airline, which were almost entirely owned by State before their restructuring, the graph below show us that direct participation of State in the other concerned airline’s cases represented less than 70 % of the capital.

Figure 7.13: Shareholding structure before state aid and restructuring

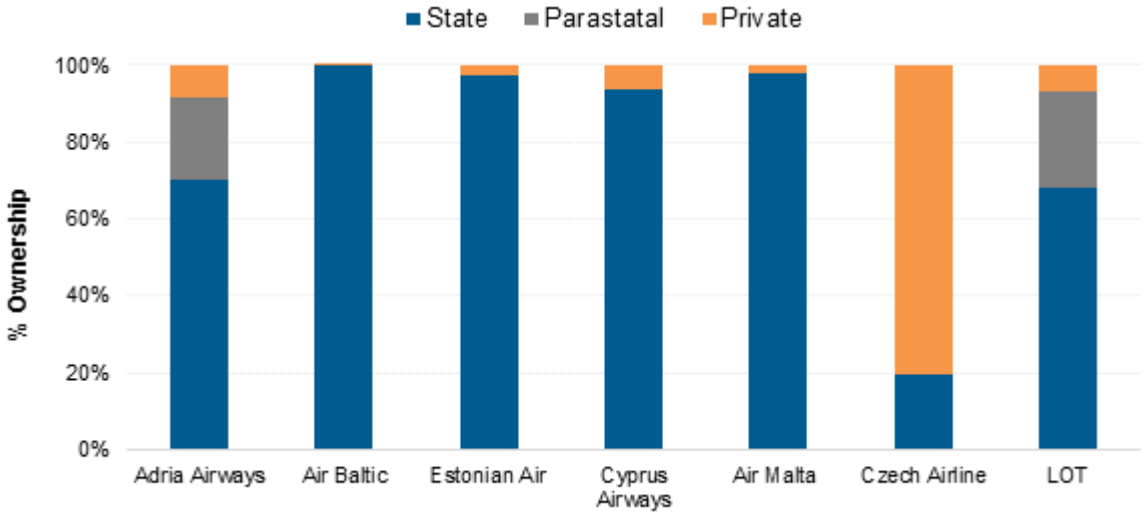


Source: Mott MacDonald, C Decisions

Shareholders after restructuring

After restructuring, the graph below indicates that State participation (direct and indirect) exceeds 90% in every case.

Figure 7.14: Shareholding structure after state aid and restructuring



Source: Mott MacDonald, EC Decisions

7.3.4 State Aid to Airports and Start-up Aid to Airlines

In total of approximately 70 ongoing State aid investigations in the aviation sector in 2013, the majority of cases concerned State aid to airports and start-up aid to airlines. The listing below highlights investigations initiated in 2013.

Start-up aids aiming to establish connections from Romanian airports are subject to a detailed analysis below, focusing on understanding the potential effect of such aids.

State Aid to Airports

1. SA.33983 Compensation to Sardinian airports for public service obligations (SGEI)
   a. EC Decision of 23/01/13[170]
   b. EC Press release 23/01/13[171]
2. SA.35511 Amendments to the Decision on discharging public service obligations by Zračnaluka Osijek d.o.o. (Osijek Airport) in the period from 2009 to 2013 of 10 January 2012
3. SA.35697 SKIATHOS AIRPORT (APRON EXTENSION & NEW TAXIWAY)
   a. EC Decision of 20/02/13[172]

[170] EC Decision of 23.01.13 to initiate the formal investigation procedure, C(2013) 106, JOCE C/152/2013, http://ec.europa.eu/competition/state_aid/cases/247487/247487_1426436_82_2.pdf

[171] State aid: Commission opens in-depth investigation into compensation for Sardinian airports, EC, IP/13/38 , 23.01.13, http://europa.eu/rapid/press-release_IP-13-38_en.htm

[172] EC Decision of 20.02.13 to consider the notified measure as compatible State aid, C (2012) 787, C (2012) 787, http://ec.europa.eu/competition/state_aid/cases/246598/246598_1411183_83_2.pdf, JOCE C/81/2013, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013XC0320%2803%29&from=EN.

4. SA.36197 Operação de venda da ANA - Aeroportos de Portugal, S.A. (Privatisation of ANA - Airports of Portugal)
   a. EC Decision of 19/06/13[173]
   b. EC Press release 19/06/13[174]
5. SA.36297 Amendments to the project of infrastructure development at the Riga international airport
   a. EC Decision of 21/08/13[175]
6. SA.36377 Financing of Airport infrastructure investments at Memmingen Airport (2013 - 2017)
   a. EC Decision of 05/06/13[176]
   b. EC Press release of 05/06/13[177]
7. SA.36554 Befreiung von der LuftverkehrsteuerhinsichtlichAbflügen von Inselbewohnern und in anderenFällen
   a. EC Decision of 31/05/13[178]
8. SA.36560 Renovation of Tampere-Pirkkala Airport
   a. EC Decision of 04/12/13[179]
9. SA.36561 Modernisation of Vaasa Airport
   a. EC Decision of 02/07/13[180]
   b. EC Press release 02/07/13[181]
10. SA.37125 Opération de financement de la construction de l'aéroport du Grand Ouest (Notre-Dame des Landes)
    a. EC Decision of 20/11/13[182]
    b. EC Press release of 20/11/13[183]
11. SA.29064 Unlawful State aid by Ireland to Aer Lingus, AerArann and Dublin Airport Authority
    a. EC Decision of 25.07.12[184]

---

[173] EC Decision of 19.06.13 to consider that the privatisation process of ANA - Aeroportos de Portugal, S.A. does not involve State aid, C (2013) 3546, http://ec.europa.eu/competition/state_aid/cases/247678/247678_1454747_93_4.pdf, JOCEC/256/2013, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013XC0905%2801%29&from=EN.

[174] State aid: Commission finds privatisation of ANA – Aeroportos de Portugal does not involve state aid, EC, IP/13/564, 19.06.13, http://europa.eu/rapid/press-release_IP-13-564_en.htm.

[175] EC Decision of 21.08.13 to raise no objection, C(2013) 5440, http://ec.europa.eu/competition/state_aid/cases/247908/247908_1468220_134_2.pdf, JOCE C/306/2013, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013XC1022%2803%29&from=EN.

[176] EC Decision of 05.06.13 to consider the measure as compatible State aid, C (2013) 3194, http://ec.europa.eu/competition/state_aid/cases/248084/248084_1454044_147_2.pdf, JOCE C/256/2013, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013XC0905%2801%29&from=EN.

[177] State aid: Commission approves investment aid for infrastructure project at German airport Memmingen, EC, IP/13/502, http://europa.eu/rapid/press-release_IP-13-502_en.htm.

[178] EC Decision of 31.05.13 to raise no objections, C (2013) 3351, http://ec.europa.eu/competition/state_aid/cases/248462/248462_1437443_84_2.pdf, JOCE C/183/2013, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013XC0628%2801%29&from=EN.

[179] EC Decision of 04.12.13, C (2013) 8448, http://ec.europa.eu/competition/state_aid/cases/248752/248752_1512944_157_2.pdf.

[180] EC Decision of 02.07.13, C (2013) 4028, http://ec.europa.eu/competition/state_aid/cases/248751/248751_1512951_106_2.pdf.

[181] State aid: Commission approves aid for infrastructure investment at Finnish Vaasa Airport, EC, IP/13/641, 02.07.2013, http://europa.eu/rapid/press-release_IP-13-641_en.htm.

[182] EC Decision of 20.11.2013 to consider state aid compatible with the internal market, C (2013) 7891, http://ec.europa.eu/competition/state_aid/cases/249910/249910_1513267_131_2.pdf, JOCE C/69/2014, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014XC0307%2802%29&from=EN.

[183] State aid: Commission approves aid for the construction of French airport Notre-Dame-des-Landes, EC, IP/13/1125, 20.11.2013., http://europa.eu/rapid/press-release_IP-13-1125_en.htm.

[184] EC Decision of 25.07.2012, SA.29064, JOCE L/119/2013, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013D0199&from=EN.

Start-up aid to airlines

12. SA.33909 Girona and Reus Airports - Aid to Ryanair
    a. EC Press release of 16/10/13[185]
13. SA.35908 State aid scheme for new airlines departing from Sibiu
    a. EC Decision of 22/05/13[186]
14. SA.35979 Start-up aid to airlines departing from Oradea Airport
    a. EC Decision of 27/05/13[187]

Table 7.7: Start-up aid to airports - sources

Item	Website Address
1	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_33983
2	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_35511
3	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_35697
4	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_36197
5	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_36297
6	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_36377 http://europa.eu/rapid/press-release_IP-13-502_en.htm
7	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_36554
8	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_36560
9	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_36561
10	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_37125
11	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_29064

Source: Mott MacDonald

Table 7.8: Start-up aid to airlines - sources

Item	Website Address
1	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_33909
2	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_35908
3	http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_35979

Source: Mott MacDonald

Start-up Aids to Airlines Departing from Romanian Airports

Following pre-notification, Romanian authorities informed during March and April 2013 the Commission of aid measures aiming to provide support for the opening of new air transport services connecting Sibiu International Airport[188] and Oradea Airport to other EU airports[189].

[185] State aid: Commission opens in-depth investigation into airlines operating at Spanish airports Girona-Costa Brava and Reus, EC, IP/13/956, 16.10.2013, http://europa.eu/rapid/press-release_IP-13-956_en.htm.

[186] EC Decision of 22.05.13 to consider the aid compatible with Article 107(3)(c) TFEU, C (2013) 3095, http://ec.europa.eu/competition/state_aid/cases/248081/248081_1437162_86_2.pdf, JOCE C/200/2013, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013XC0712%2801%29&from=EN, JOCE C/183/2013, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013XC0628%2801%29&from=EN.

[187] EC Decision of 27.05.13 to consider the aid compatible with Article 107(3)(c) TFEU, C (2013) 3138, http://ec.europa.eu/competition/state_aid/cases/248228/248228_1439811_86_2.pdf, JOCE C/232/2013, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013XC0810%2801%29&from=EN.

[188] European Commission's Case Page,http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_35908

The aim of the measures is to grant start-up aid to one or more air carriers, via a tendering procedure, opening new routes or frequencies which increase the net volume of traffic between the concerned Romanian airports and other EU airports.

The start-up financial assistance will be provided as a direct grant to carriers whose tenders have been accepted, for the opening of new routes within the European Union and/or frequencies which increase the net volume of traffic to and from Sibiu International Airport and Oradea Airport, but do not compete with any existing air services to or from the same cities or conurbations.

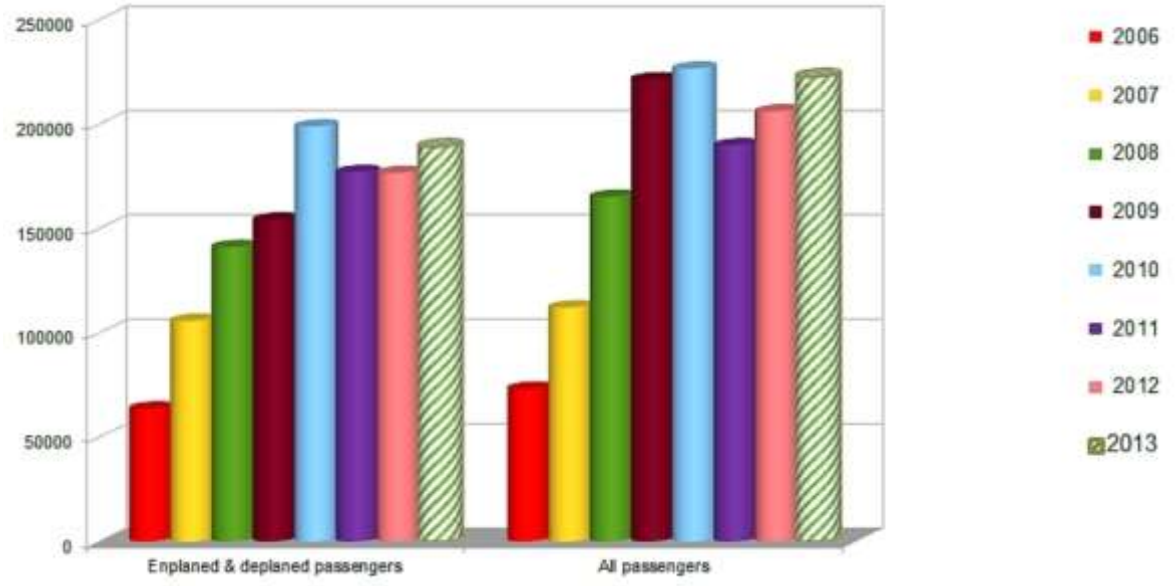
Moreover, none of the routes in question are currently operated by high-speed rail services.

The total budget of the aids is in excel of EUR 2.8 million in Sibiu International Airport's case and in excess of EUR 2.4 million in Oradea Airport's case. Moreover, the period in which contracts for start-up aid for the opening of new destinations departing from airports concerned may be concluded extends over a period of five years.

Sibiu International Airport is considered to be an important air traffic gateway in the geographical center of Romania. Due to its recent expansion and modernization, air traffic has seen an unprecedented growth since 2006[190].

The chart below shows us the changes in passenger traffic from 2006 to 2013.

Figure 7.15: Sibiu International Airport passengers traffic from 2006 to 2013 (2013 estimate)



Source: sibiuairport.ro

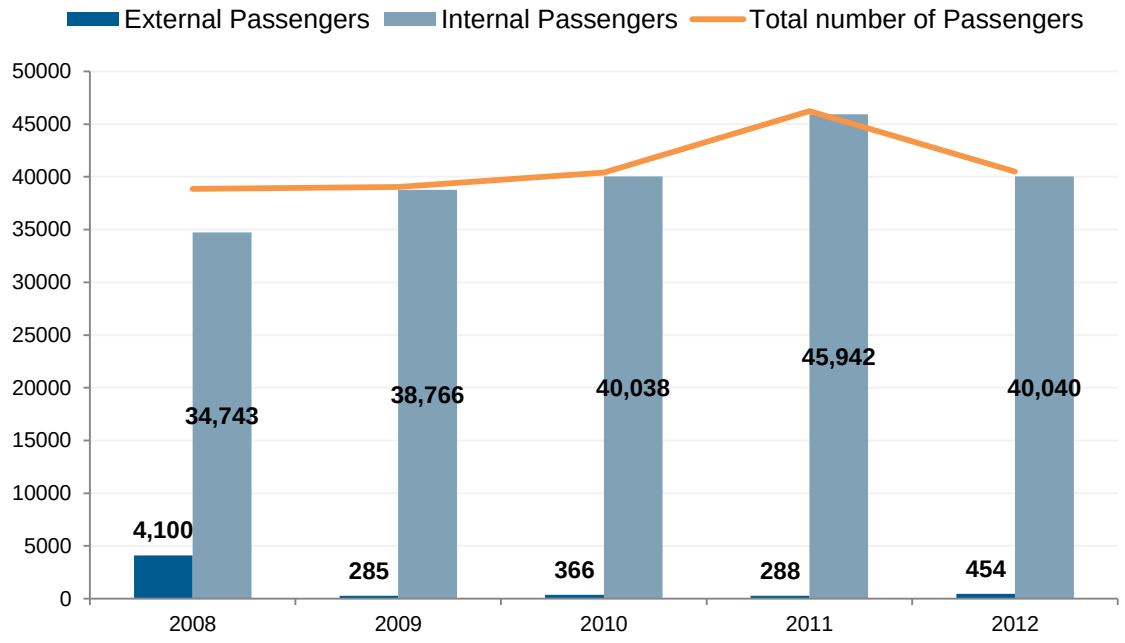
Sibiu International Airport's notification to the Commission followed its consideration for serious investments to meet the growing demand.

Oradea Airport also benefited from modernization. Since 2008, both passenger numbers and aircraft movements have increased, with a slight decline between 2011 and 2012[191].

[189] European Commission's Case Page,http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_35979

[190] http://www.academia.edu/5542790/THE_AIR_TRANSPORT_IN_TRANSYLVANIA_-_REALITIES_AND_PERSPECTIVES

Figure 7.16: Oradea Airport passengers between 2008 and 2012



Source: aeroportoradea.ro

In Oradea's case, the main objective of the State aid scheme to be implemented is the improvement of access to air transport services, which are of vital importance for the economic and social development of the Bihor County.

The aid scheme will concur to the regional development of the area by:

- Improving the accessibility of the inhabitants within this region;
- Improving the accessibility for the business environment within this region by developing close connections with the European markets;
- Fostering the development of new air connections with the rest of Europe;
- Fostering foreign investments;
- And fostering the internal tourism.

On 22 May 2013[192] and 27 May 2013[193], the Commission decided to consider the aids to be in accordance with the 2005 Guidelines, and therefore, to be compatible with the Treaty on the Functioning of the European Union.

Following the Commission's decision, Sibiu International Airport recorded, in the first half of 2013, a 12% increase in the number of passengers, compared to the same period in 2012[194].

[191] http://www.aeroportoradea.ro/en/about-us-m1/traffic-evolution-c9-i1.html

[192] EC Decision of 22/05/13, C (2013) 3095, http://ec.europa.eu/competition/state_aid/cases/248081/248081_1437162_86_2.pdf

[193] EC Decision of 27/05/13, C (2013) 3138, http://ec.europa.eu/competition/state_aid/cases/248228/248228_1439811_86_2.pdf

[194] http://www.sibiuairport.ro/statistics.html

Furthermore, Wizz Air, the largest low-cost airline in Central and Eastern Europe, announced a new route from London (Luton) to Sibiu, Romania, starting on 14 June 2014. The new route will initially run twice a week and tickets can be purchased for prices starting at RON 179 (approximately EUR 40).

Effects of the granted aid on Oradea Airport are not yet known.

Marketing Agreements between Ryanair and Catalan Airports[195]

On 18 November 2011, the Commission received a complaint from a private citizen alleging that unlawful State aid had been provided by Spain at Girona and Reus airports in favor of Ryanair.

On 23 May 2012, the Commission received a second complaint from a competitor airline user of Barcelona-El Prat airport also alleging unlawful State aid provided by Spain at Girona and Reus airports in favor of Ryanair in the form of marketing and promotion agreements.

Therefore, the Commission began examining the marketing agreements in relation to Girona and Reus airports, highlighting certain conditions of contract revolving around advertisement of the regions of Girona and Reus.

On the one hand, Spain said that the primary objective of the marketing agreements in question is to increase the economic and touristic development of Catalonia through the provision of marketing services. Spain also stated that the marketing agreements concluded with Ryanair and other airlines using Girona and Reus airports correspond to the purchase of marketing services at a market price.

On the other hand, the Commission preliminarily considered that the agreements appear to be different from promotion activities that a public authority may carry out for the general benefit of the immunity it represents in that they seem to be specifically targeted at developing the activity of Girona and Reus airports.

In other words, (1) the agreements seem to grant a specific advantage to the airport operators of Girona and Reus and, insofar as they provide direct payment to the airlines concerned, and (2) they may also generate an advantage for those airlines by lowering the costs that they would normally have to bear in order to fly to/from a given destination.

On 16 October 2013[196], the Commission announced the opening of an in-depth investigation into the marketing agreement between Ryanair and the Catalan airports. Indeed, the Commission's preliminary conclusion would indicate that the marketing agreement may constitute State aid to the airlines concerned and could also constitute aid to the airport concerned.

Moreover, the Commission claimed it did not see any legal basis on which it could consider the possible State aid granted to the airports of Girona and Reus compatible with the internal market.

Thus, the Commission launched an investigation to assess whether marketing agreements concluded between public authorities and airlines using Girona-Costa Brava and Reus airports in Catalonia are in line with EU State aid rules.

In the investigation, the Commission will also verify whether Girona and Reus airports themselves may have benefitted indirectly from the marketing agreements, since the agreements might relieve the airports of costs that they would otherwise normally bear in developing their activities.

---

[195] European Commission's Case Page,http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_33909

[196] EC Decision of 16/10/13, C (2013) 6615, http://ec.europa.eu/competition/state_aid/cases/250263/250263_1528239_141_2.pdf

In its statement, Ryanair pointed out that the European Court of Justice has already issued a judgment in 2008, when a similar investigation was opened into the agreement between the low-cost airline and the Belgian airport of Charleroi, stating that marketing agreements with airports are not State aid.

Moreover, the City Council of Reus has totally denied ever having given State aid to Ryanair explaining that between the private airline and the airport there is « only a commercial and tourist promotion contract », which is « within the legal framework ».

7.3.5 Policy Developments

Currently, the air transport industry is fully subject to the generally applicable EU competition law framework. The general antitrust Council Regulation 1/2003[197] continues to apply to all air transport services after the adoption of Council Regulation 411/2004[198]. In addition, Council Regulation 487/2009[199] is in force since 2009 regulating the application of Article 101 (3) of the TFEU to certain categories of agreements and concerted practices in the air transport sector. There are still no notices or communications specific to antitrust in the air transport sector.

An important and practical development that took place in July 2013 was the publishing on the Commission's site of three volumes of *Compilations of EU antitrust legislation*.[200] These handbooks summarize, under certain categories, all rules applicable to antitrust enforcement, making it much easier for the reader to go through the various pieces of legislation. The third volume of the compilations is of particular interest to air transport because it combines all applicable sector-specific rules currently in force in different sectors, including aviation.[201]

Another important regulatory development that took place in 2013 after several years of discussions is the European Commission's adoption *of a proposal for a Directive on damages actions for breaches of EU Competition law.*[202]The proposal is set to remove a number of practical difficulties which victims of infringements of the EU antitrust rules, such as cartels and abuses of a dominant market position, frequently face when they try to receive a fair compensation for the damage they have suffered. An important aspect of the proposed Directive is that it fully takes into account the key role played by competition authorities (at EU or national level) to investigate, find and sanction infringements. Contrary to the US system, the proposal does not seek to leave the punishment and deterrence to private litigation.

The Directive in its current form seems to benefit claimants the most, particularly by the rules relating to disclosure of documents and the rebuttable presumption of harm. On the other hand, aspects of the

[197] Council Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty

[198] Council Regulation (EC) No 411/2004 of 26 February 2004 repealing Regulation (EEC) No 3975/87 and amending Regulations (EEC) No 3976/87 and (EC) No 1/2003, in connection with air transport between the Community and third countries

[199] Council Regulation (EC) No 487/2009 of 25 May 2009 on the application of Article 81(3) of the Treaty to certain categories of agreements and concerted practices in the air transport sector (Codified version) (Official Journal L 148, 11.6.2009)

[200] European Commission, Legislation → Air Transport →Antitrust, at http://ec.europa.eu/competition/antitrust/legislation/legislation.html

[202] COM(2013) 404 final, Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on certain rules governing actions for damages under national law for infringements of the competition law provisions of the Member States and of the European Union, 11.06.2013, at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0404:FIN:EN:PDF

Directive are advantageous for defendants as well who will also benefit from the disclosure regime to obtain documents from claimants relevant to the passing-on defence. An important note is also that the Directive will end finally the debate on whether or not a passing-on defence is available.

In cartel cases the cooperation between companies and competition authorities under the so-called "leniency" programmes plays a key role.

In order to facilitate determining the exact amount of damage suffered by consumers and businesses, the Commission has also adopted a *Communication on quantifying antitrust harm* directive. The Commission's services have also prepared a *'Practical Guide'* which will be a useful tool for victims and national judges. These documents are not legally binding.

Nearly 10 years after the most recent reform, the European Commission carried out in 2013 a consultation (20 Jun – 12 Sep) on proposals to change the EU Merger Regulation. The main objectives of this consultation were fine tuning and improving the EU merger review procedure, and simplifying existing procedures. In particular, the Commission welcomed views on extending the scope of the EU Merger Regulation to dealing with anti-competitive effects stemming from certain acquisition of non-controlling minority shareholdings and reforming the referral system for transferring cases from Member States to the Commission both before and after notification. This initiative is viewed to go one step further than the recently adopted *Merger Simplification Package* that simplifies procedures for unproblematic mergers within the framework of the current *Merger Regulation*. Although none of these proposed changes are likely to result in a fundamental change in EU merger control, the consultation provided useful opportunities for stakeholders to call for a more efficient approach that is expected to result in faster clearance decisions, greater legal certainty and lower legal expenditures.

In light of the comments received by stakeholders that took part in the consultation process, the Commission has decided[203] that the next step to advance the initiative will be a White Paper to be adopted in 2014.

On the State aid scene, an expected and important development in 2013 was the change in the rules for airports and airlines, initiated by the European Commission. In this respect, from 03 Jul 2013 to 25 Sep 2013 the European Commission carried out a consultation with stakeholders on the proposed draft Guidelines on State aid to airports and airlines.[204]The presented draft guidelines introduced a new approach to the assessment of compatibility of aid to airports and airlines, namely:

- Defining maximum permissible aid intensities depending on the size of the airport;
- Allowing operating aid to regional airports to be declared compatible but only for a transitional period of up to 10 years;
- And, streamlining and adapting to recent market developments the compatibility conditions for start-up aid to airlines during the transitional period.

[203] See European Commission, Indicative updated roadmap, published on 12 December 2013, at http://ec.europa.eu/competition/consultations/2013_merger_control/roadmap2_en.pdf

[204] European Commission → Competition → Public Consultations, at http://ec.europa.eu/competition/consultations/2013_aviation_guidelines/index_en.html

7.3.6 Competition Policy USA

Important Decisions

As a pioneer in the introduction of an Open Skies policy, the US undertook the first steps towards economic deregulation of domestic air transport in early 1978, with the adoption of the (US) International Air Transportation Competition Act. 35 years later North America has emerged into the most concentrated market in the world. This is presented in the table below which measures the market concentration for the main global regions by seats between 06 May 2013 and 13 May 2013.

Table 7.9: Market Concentration per Region

Region	Top 5 Concentration Ratio***	HHI Index****
North America	69%*	1,089**
Latin America	53%	767
Middle East	52%	791
Europe	45%	524
Africa	36%	420
Asia-Pacific	31%	328

*North America's concentration ratio would be 73% if American Airlines and US Airways were already merged
**1,404 if AA and US Air counted together
*** The Concentration ratio adds up the combined market share of the top few companies in the industry Usually the market share can be measured by sales value, units sold, employment or any other relevant indicator.
**** The Herfindahl-Hirschman Index (HHI) is calculated by squaring the percentage market share of each firm in the market and summing these numbers. The lower the index the more competitive the market is, while a high number indicates market concentration and possible monopoly power.
Source: Innovata data

In relation to these consolidation developments, in its latest airline industry financial forecast, IATA predicts that North America will be the second most profitable region in the world in 2013, with an EBITA margin forecast at 4.1% compared with a global average forecast of 3.3%. This superior profitability is to a big extent due to the greater capacity restraint that has resulted from mergers among the biggest US carriers.

Undoubtedly, one of the main transactions was the $11 billion merger between US Airways and American Airlines, which reduced the number of major airline groups from five to four in North America.

In this respect, on 13 August 2013, the United States Department of Justice (DoJ), along with six State Attorneys General and the Attorney General for the District of Columbia, announced[205] that it is bringing proceedings against American Airlines and US Airways under Section 7 of the Clayton Act to seek an injunction prohibiting the proposed merger between the two air carriers.

The Department of Justice alleges that the merger, if successful, would lessen competition or tend to create a monopoly. If the two airlines merge, the combined company would be the world's largest airline. According to the Department of Justice's lawsuit, this would significantly reduce competition on 17 domestic routes such as Washington, Charlotte, North Carolina and Dallas that currently have head to head competition.

[205] The United States Department of Justice, Justice News, Justice Department Files Antitrust Lawsuit Challenging Proposed Merger Between US Airways and American Airlines, August 13, 2013, at http://www.justice.gov/opa/pr/2013/August/13-at-909.html

In November 2013, the Department of Justice proposed[206] a settlement requiring US Airways and American Airlines to divest slots and gates at key constrained airports across the country to low cost airlines (LCCs) in order to enhance system-wide competition in the airline industry resulting in more choices and more competitive airfares for consumers.

Six State Attorney Generals joined in the department's proposed settlement, which was filed in the US District Court for the District of Columbia.

The US District Court approved the settlement in the end of November 2013 and the merger was finally closed on 09 December 2013.

7.3.7 Competition Policy Third Countries

Asia Pacific

It is predicted that during the next 20 years, nearly half of the world's air traffic growth will be driven by travel to, from, or within the Asia Pacific region[207]. Total traffic for the region is expected to grow 6.3% per year. The structure of the Asia Pacific airline industry is changing as regulations liberalize and carriers expand beyond national boundaries. There is a clear trend towards increased regulatory changes, infrastructure improvements, heightened competition, consolidation and new allies in the region.

These changes were accompanied by increased activity and development of the competition regimes of the young Asia Pacific competition authorities. In the past few years the Commission has been aiming at establishing close cooperation links with many Competition Authorities in the Asia Pacific Region in order to ensure coherence and compatibility of decisions, particularly in merger and antitrust cases, subject to multiple jurisdictions. In this respect, a close cooperation has been established by the Commission and the Chinese Ministry of Commerce (MOFCOM), which have coordinated their efforts and exchanged information and views on mutually compatible remedies in several merger review cases.

An important development in respect of antitrust investigations in the aviation sector was the issuing in 2013 by the Malaysia Competition Commission (MyCC) of a Proposed Decision regarding the collaboration agreement between Malaysian Airlines and AirAsia. The MyCC found that this agreement amounted to market sharing in contravention of section 4 of the Malaysian Competition Act 2010 and proposed fines of RM 10,000,000 on each of Malaysian Airlines and AirAsia[208].

Latin America and the Caribbean

There has been positive evolution of competition policy and competition institutions in Latin America and the Caribbean over the last twenty years. Previously, many Latin American economies were characterised by protectionist economic policies.

---

[206] The United States Department of Justice, Justice News, JUSTICE DEPARTMENT REQUIRES US AIRWAYS AND AMERICAN AIRLINES TO DIVEST FACILITIES AT SEVEN KEY AIRPORTS TO ENHANCE SYSTEM-WIDE COMPETITION AND SETTLE MERGER CHALLENGE, November 12, 2013, at http://www.justice.gov/atr/public/press_releases/2013/301616.htm

[207] Current Market Outlook 2013-2032, Boeing, at http://www.boeing.com/assets/pdf/commercial/cmo/pdf/Boeing_Current_Market_Outlook_2013.pdf

[208] OECD, Asia-Pacific Competition Update, December 2013, Issue 10 at http://www.oecd.org/daf/competition/OECD_NEWSLETTER_2013_2nd%28Final%29.pdf

The subsequent shift away from state interventionism was accompanied by a proliferation of competition laws in the 1990s and early part of this century. Currently, the region is experiencing a phase of consolidation and increasing convergence of competition law.

Recent developments include the adoption of tools to make law enforcement more effective, including strengthened investigation powers in Mexico and Chile; and there is greater reliance on economic analysis in a number of countries ranging from Chile to Honduras.

Middle East

The fastest regional airline traffic growth in the world is and is expected to remain in the Middle East, where by 2030 the region's airlines will represent 11% of world traffic, up from 7% in 2010. Efforts have been undertaken to gradually liberalise market access in the region. However, the pace of liberalisation is defined by national or unilateral lines. In this respect, the Kingdom of Saudi Arabia (KSA) undertook significant steps in 2012 towards opening its markets. Gulf Air and Qatar Airways have been granted rights to operate domestic flights within the KSA and Saudi Airlines entered into its final stage of privatisation in 2013.

Africa

As mentioned above, steps have been undertaken towards the introduction of competition policy and legislation with the development of competition regulations for the air transport market. South Africa is particularly advanced and has already hosted events in this respect such as the ICAO Air Services Negotiation Event (ICAN 2013)[209].

7.3.8 Developments of Factors Affecting Competitiveness

Emissions Trading Scheme (ETS)

2013 was a dynamic year for the EU ETS on aviation. Taking into account the progress that was being made in the process at ICAO for addressing the climate impacts of international aviation the European Union decided to temporally stop the implementation of the EU ETS Directive in 2013 (so called “stop the clock”) as regards extra-European flights. The EU had been facing fierce disapproval from third countries and from some parts of the aviation industry, The new law entered into force on 30 April 2013, which was formerly the deadline for all airlines to submit permits to cover flight emissions in 2012. This decision was designed facilitate the negotiations at ICAO leading to a decision on developing a Global Market-Based measure (MBM) at the 38th ICAO Assembly.

Following the agreement on the development of a Global MBM by 2016 and for implementation from 2020 reached at the Assembly, which took place in Montreal in October 2013, the European Commission published its revised draft legislation on aviation and the EU ETS scheme. Although the draft maintained the concept of including international aviation to avoid competitive distortions, it introduced the concept of regional airspace and imposed the surrender of certificates for all flights beginning or ending in European airspace. This airspace concept was amended by the EU's legislators (Council and Parliament) so that the ETS would effectively continue to only apply to intra-European flights, i.e. between European airports. The new legislation entered into force in April 2014.

[209] ICAO Conference hosted by the Department of Transport of South Africa, at http://www.icao.int/Meetings/ICAN2013/Documents/Programme.pdf

Single European Sky (SES)

EUROCONTROL's *Challenges of Growth* 2013 study[210], published in July 2013, forecasted that the number of flights in Europe will increase by 50% over the next 10-20 years. In addition, EUROCONTROL also made the first estimate of the delay impact of airport congestion on future network performance, showing that Air Traffic Flow and Capacity Management (ATFCM) airport delay will increase up from around 1 minute/flight in 2012 to 5-6 minutes per flight in 2035. In addition to the expected airport congestion, a central problem is that Europe's air traffic management systems are fragmented, outdated and therefore somewhat inefficient. All these inefficiencies have been negatively affecting the competitiveness of the European aviation sector, resulting in increased flight time, delays, extra fuel burn and CO2 emissions, as well as extra costs of around EUR 5 billion a year[211]. By contrast, the US air traffic management system handles nearly 60% more flights in an airspace of the same size; but with 22% less air traffic controllers and at half the costs[212].

In order to tackle these challenges, boost the competitiveness of the European aviation sector, and strengthen the adherence to deadlines and performance targets, in June 2013, the European Commission proposed to update the four regulations creating the Single European Sky (SES), and amend rules governing the European Aviation Safety Agency (EASA).

The core elements of the SES2+ proposal[213] include the following:

- **Better Safety and Oversight**

  The Commission proposes full organisational and budgetary separation of National Supervisory Authorities from the air traffic control organisations that they oversee. At the same time it will be ensured that sufficient resources are given to the National Supervisory Authorities to do their tasks.

- **Better Air Traffic Management Performance**

  The Commission's proposal aims at setting targets in a more independent manner in order to ensure better air traffic management performance.

- **New Business Opportunities in Support Services**

  The Commission also proposes to open up new business opportunities for companies to provide support services to air traffic control organisations.

- **Enabling Industrial Partnerships**

  This part of the proposal aims at building upon industry's initiatives to support the further development of nine Functional Airspace Blocks (FABs) which are intended to group various national airspaces in order to gain efficiency, cut costs and reduce emissions.

---

[210] EUROCONTROL, Challenges of Growth 2013, July 2013, at http://www.eurocontrol.int/articles/challenges-growth

[211] Opinion on SES 2 by EESC 15 January 2009, 2.3.

[212] .; International Competitiveness of the EU Aviation Industry , Draft 4.11.2014, page 4

[213] Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EC) No 216/2008 in the field of aerodromes, air traffic management and air navigation services, COM(2013) 409 final, 11.6.2013, at http://ec.europa.eu/transport/modes/air/single_european_sky/doc/ses2plus/com%282013%29409_en.pdf

Public Service Obligations (PSOs)

The fragile financial situation in 2013 of numerous ailing flag carriers particularly in Central, Eastern and South-East Europe (CESE), has led to increased cooperation between DG Competition and DG MOVE with the aim of proposing practicable solutions for preserving the connectivity needs of this region.

In this respect, the flexible use of Public Service Obligations (PSOs), regulated in Air Services Regulation 1008/2008[214] could be seen as a tool for ensuring the connectivity needs of CESE countries. When examining the PSO Inventory table[215] provided by the European Commission, it is striking that from a total of 272 PSO entries, only 31 routes (11%) are in a country from the CESE region, namely Greece[216]. This shows that while PSO routes are used in some Western European countries, this is not the case in Central and Eastern Europe.

In 2014 and beyond, the Commission would be well advised to monitor whether a more flexible interpretation of terms such as 'thin route', 'peripheral area' or ' development area' of Regulation 1008/2008, or indeed an evaluation of the merits of introducing network PSO, or assessing the feasibility of their introduction on international routes, could be a way forward to facilitate the transition of national markets into integral elements of a Single European Aviation Market by reducing the negative impact of such a transition.

Intermodality Projects

In November 2013 the European Observatory on Airport Capacity completed its work on intermodality with a set of recommendations for the European Commission, aimed at facilitating air/rail solutions from a technical, commercial, regulatory and infrastructure point of view.

Improving intermodal travel solution is a top priority for the aviation industry since in some key European airports improving capacity with additional infrastructure is not a solution, due to lack of physical space and urbanisation of areas around the existing runways. Therefore, the substitution of short-medium haul flight with HST can increase air traffic capacity and thus allow EU airports to meet the challenges of growth of air traffic in the future, by making capacity for long haul flights available.

Not surprisingly the 2011 Transport White Paper of the European Commission set the target of linking, by 2050, 37 core airports[217] to rail networks preferably with HST. At the same time, the White Paper also pledges for tripling the length of the HST rail network by 2030, in order to have more cities being served by HST. Of course the main barrier remains the lack of infrastructure investments to build efficient rail links to airports, but the new EU infrastructure investment policy has intermodality between different transport modes at its core and it is providing EU funding for related projects.

---

[214] Regulation (EC) No 1008/2008 of the European Parliament and of the Council on common rules for the operation of air services in the Community (Recast), 24 September 2008

[215] List of Public Service Obligations, (last update: 25/02/2013), at http://ec.europa.eu/transport/modes/air/internal_market/doc/pso_-_eu_and_eea_-_feb_2013.pdf

[216] Considering that for three PSO routes in Czech Republic the tenders for finding suitable operators were not successful.

[217] The definition of core airports is part of the new EU transport infrastructure policy (CEF and TEN-T), EC Regulation 1315/2013 and Regulation 1316/2013 where also all airports are listed and represented on maps.

Infrastructure Decisions

Airports expansion and other major infrastructure projects imply several years of planning and construction. Most infrastructure projects for airport expansion imply difficult relationships with stakeholders and local residents who are directly impacted by increased emissions and aircraft noise as a result of growth in air traffic levels.

Regarding updates in 2013 it is worth reporting about the developments for the expansion of London Airport capacity. Heathrow Airport is the busiest in the EU and it operates with two runways at nearly 98% of capacity and for a number of years there has been an ongoing debate about possible runway expansion at the airport. After lengthy discussions in December 2013 the Airport Commission, chaired by Sir Howard Davies, unveiled its report with three recommended options: (1) building a third runway at London Heathrow in a location North-West from the current airfield; (2) building a second runway at London Gatwick Airport in order to increase the dual hub nature of London's air connectivity, and (3) the lengthening of one of Heathrow's existing runways that would result in an increase of aircraft movements with limited investments. The Airport Commission ruled out other options including the building a new airport in the Thames Estuary area, as proposed by the London Mayor Boris Johnson.

In December 2013 Regulation 1316/2013[218], which establishes the new EU infrastructure policy, was published in the Official Journal of the EU. The new text gives the legal basis of the Connecting Europe Facility (CEF) and the related new Trans-European Transport Network (TEN-T) Guidelines, where both represent an important change in the EU funding policy for infrastructure. With a budget of EUR 26.3 billion for the period 2014-2020, the CEF aims at reviewing and improving the EU action for supporting transport which has more than 20 years of history.

The new EU infrastructure policy considers a Core network[219] of different transport modes unified in a new TEN-T based on 9 corridors which represent East-West and North-South major transport axes. For the first time, the EU set important infrastructure requirements and targets for the Core network, such as where the funding will be mainly allocated and that completion date to be by 2030. However, targets are also set for the Comprehensive network which is meant to ensure and/or improve accessibility of regional and national networks to the Core network. The EU financial contribution will focus on Core projects that are aimed at improving intermodality and cross-border transport, in completing missing links and in removing bottlenecks by improving the infrastructure. Moreover, all projects must have a clear EU added-value prioritization will be given to projects that are key for building a truly EU transport network as a backbone of the Single Market.

Specifically for aviation, the CEF identified 38 key airports which need to be linked to major cities through the rail network. The rest of the focus of the investment policy of the EU will provide funding not only for optimizing the integration and interconnection of transport modes but also ensuring the capacity and accessibility of transport infrastructure. Therefore, EU support will be dedicated to support the timely implementation of the Single European Sky (SES), of SESAR and of the process of modernization of Air Traffic Management (ATM) in Europe.

---

[218] REGULATION (EU) No 1316/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 establishing the Connecting Europe Facility, at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:348:0129:0171:EN:PDF

[219] According to the definition given in Regulation (EU) No 1316/2013 "core network" means the transport infrastructure identified in accordance with Chapter III of Regulation (EU) No 1315/2013; See at art.2, para 14, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:348:0129:0171:EN:PDF

The map below, which can be found in Regulation 1315/2013[220], illustrates the Core Network airports and related Core rail network in the EU Member States.

Figure 7.17: Core network airports and related core rail network in the EU member states

Source: EU Regulation 1315/2013[221]

As a last Annual Call of the old TEN-T programming period, the EU dedicated in December 2013 EUR 350 million to the financing of European transport infrastructure projects throughout the Union, with EUR 30 million dedicated to the objectives of ATM modernization and implementation of the SES.

[220] REGULATION (EU) No 1315/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU, at http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1315&from=EN

[221] REGULATION (EU) No 1315/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU, at http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1315&from=EN

7.4 Significant Market Developments

7.4.1 Ownership and Control

With signing on 24 June 2010[222] the second stage of the EU-US Air Transport Agreement, the two parties committed to engage in a process towards the reform of ownership and control. After that, the EU has reiterated its strong desire to advance EU-US air transport liberalisation on many occasions[223], including ownership and control, and cabotage. During the Thirteenth Meeting of the US-EU Joint Committee[224], which took place on 05 June 2013, the European delegation suggested that the Transatlantic Trade and Investment Partnership (TTIP) negotiations initiated in July 2013 could be seen as an opportunity to reform the EU and US air carriers' investment regimes, and to reinforce efforts on regulatory harmonisation. However, the US delegation refused to discuss the subject, pointing out at the time an on-going 90-day consultation period with Congress and stakeholders.

In 2013, the minority acquisition of Korean Air into CSA, the minority acquisitions of Etihad into several European airlines, and Delta's minority acquisition of Virgin Atlantic gave rise to the discussion about effective control. Given that in these cases, the acquisition was done by a strategic investor, the transactions generate the highest benefit if strategic advantages can be generated for the acquirer, which, in cases of an airline, would mean integration of the network of the acquired airline into that of the acquirer. However, "effective control" must remain in the hands of a legal or natural European person. Assurances must be sought that in all cases involving acquisition of minority shares of European airlines, compliance with Regulation 1008/2008 is ensured.

7.4.2 Privatisation

The Portuguese government rejected in late 2012 the only second round bid it had, made by Synergy Aerospace, for the acquisition of TAP Portugal. The sale of TAP is a condition of the country's 2011 bailout agreement with the EU and IMF. It seems that the Portuguese government prefers waiting for other bids while supporting expansion at TAP until market conditions for a potential sale improve.

It remains to be seen whether and who will be the new bidders so that the government restarts the privatisation process.

In the CESE region, the Polish government has passed a regulation in April 2013 that paves the way for the privatization of LOT Polish[225].

This year was also marked with the government's plan to privatise Aerodrom Ljubljana and the flag carrier Adria Airways that is going through an ambitious restructuring process[226].

---

[222] International Aviation: United States, EC Mobility & Transport, at http://ec.europa.eu/transport/modes/air/international_aviation/country_index/united_states_en.htm

[223] EU External Aviation Policy Package, European Commission, MEMO/12/714, 27 September 2012, at http://europa.eu/rapid/press-release_MEMO-12-714_en.htm

[224] Thirteenth Meeting of the U.S.-EU Joint Committee Record of Meeting June 5, 2013, at http://www.state.gov/documents/organization/220749.pdf

[225] See Poland readies LOT for privatization, at http://atwonline.com/finance-amp-data/poland-readies-lot-privatization

[226] See Slovenian Aviation Sector Looking at Revival and Privatisation in 2014, at http://www.sloveniatimes.com/slovenian-aviation-sector-looking-at-revival-and-privatisation-in-2014

Kuwait Airways also continued its long road to privatization after the law for the privatisation of Kuwait Airways Corporation was passed in January 2013[227].

Some of the uncertainties surrounding the privatization process are also illustrated by a small counter trend of re-nationalization of airlines, usually as a temporary measure, which was mainly seen in Latin America, Africa and the Caribbean regions. For example, in 2006 the government repurchased the shares in Air Tanzania, which was again transformed into wholly owned government company. As of October 2013, Aerolineas Argentinas is again state-owned and serves as the country's flag carrier.

7.5 Regulatory Trends in Europe

7.5.1 Regulatory Trends in the Development of EU External Aviation Policy

The EU aviation sector, notably Europe's international network carriers, has gone through a difficult period in the past few years and despite signs of recovery, it is still facing very serious challenges ahead. Meeting these challenges requires concentrated and rapid efforts at an EU level, with more coordinated actions. Regulators in Europe have recognized that maintaining a strong and competitive European-based aviation industry connecting the EU with the world is of strategic importance for the EU[228]. At the end of 2012 the Council of the European Union acknowledged that a more ambitious and robust EU external aviation policy should be pursued, based on the principles of reciprocity and open and fair competition in a level playing field[229].

According to the European Commission, the EU's External Aviation Policy in 2013 was, and in the coming years should be, driven by three parallel objectives:

- Creating consumer benefits, achieved through a strong continued focus on market opening;
- Safeguarding competitiveness, which suggests stronger EU-level measures to insist on ownership and control reform, reductions of the regulatory burden and an international level playing field;
- And, developing wider public policy objectives going beyond traffic rights, which require overriding public safety, security and environmental goals.

In addition, enhanced cooperation between the Commission and Member States have been recognised as a key priority for ensuring a strong EU aviation sector and a successful EU external Aviation Policy and for strengthening the competitiveness of the entire value chain of the European aviation industry.

The work on a template for a "fair competition clause" to be agreed at EU-level as a basis for inclusion in all future air services agreements also started in 2013.

---

[227] See Kuwait passes law to privatise airline, at http://www.technicalreviewmiddleeast.com/logistics/aviation/kuwait-airways-to-be-privatisated-says-government

[228] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, The EU's External Aviation Policy - Addressing Future Challenges COM(2012) 556 final, 27 September 2012

[229] Council of the European Union, Council conclusions on The EU's External Aviation Policy - Addressing Future Challenges, 3213th TRASPORT, TELECOMMUNICATIOS and ENERGY Council meeting, Brussels, 20 December 2012, at http://ue.eu.int/uedocs/cms_data/docs/pressdata/en/trans/134518.pdf

Ensuring sustainable development in the aviation sector is also a key element of the external Aviation Policy agenda.

Following the adoption of the Communication on external aviation policy on 27 September 2012[230] the Commission started in 2013 the work on the proposal and analysis of possible options for a more effective instrument to safeguard open and fair competition between EU and non-EU carriers, which can revise or replace Regulation (EC) No 868/2004.

In relation to the three pillars of the EU External Aviation Policy, the trend towards bringing existing bilateral air services agreements between EU Member States and third countries in line with EU law was preserved. At the beginning of 2013 the number of such bilateral ASAs that were brought into legal conformity reached 979[231]. By this moment the European Commission had ongoing discussions with 9 countries, among which are major emerging countries like China, South Africa, the Russian Federation and the Association of Southeast Asian Nations (ASEAN)[232].

The EU also continued to pursue market opening and *regulatory convergence* with its neighbours through the conclusions of Common Aviation Area Agreements. The significant economic benefits brought by the conclusion of such neighbourhood agreements with Western Balkan partners and Morocco in 2006, was one of the reasons for continuity in this EU policy. As it has already been outlined in the first sub-section of this chapter, 2013 was marked with the signing of the EU-Israel comprehensive Air Transport Agreement, which will gradually open up and integrate their respective markets. The fact that competition has already seriously increased on the routes between the EU and Israel after the signing of the agreement, shows that European airlines have awaited the finalization of the agreement. The year was also a turning point for the EU-Ukraine comprehensive Air Services Agreement, which was initiated in November 2013 and the first round of negotiations on a Euro-Mediterranean Aviation Agreement took place in Tunis on 27 June 2013.

Last but not least, the EU has also attempted to proceed with the conclusion of aviation agreements with key strategic partners in order to establish a process of liberalisation of ownership of airlines and a process of regulatory convergence in matters of safety and security, competition, environment and passengers protection - these could not be obtained at national levels.

In this respect, it remains to be seen whether the Transatlantic Trade and Investment Partnership (TTIP) negotiations, which started in July 2013, will also be seen as an opportunity to reform the EU and US air carriers' investment regimes and whether this will lead to relaxing the rules on ownership and control between the two countries. Another important development at the beginning of 2014 was the re-launch of the negotiations on the EU-Brazil comprehensive Air Transport Agreement. This Agreement was initiated in 2011 but it was never signed as Brazil pulled out. An important priority for the EU is also the completion of negotiations on a similar agreement with Australia, which was opened in 2008. Significant economic benefits were also estimated to be received from further EU-level comprehensive Air Transport Agreements with neighbouring countries and key partners particularly in fast-growing and/or restricted markets such as Turkey, China, Russia, the Gulf States, Japan, Egypt and India.

---

[230] http://ec.europa.eu/transport/modes/air/international_aviation/external_aviation_policy/doc/comm%282012%29556_en.pdf.

[231] Bilateral Air Services Agreements brought into legal conformity since the Court of Justice of the EU judgments of 5 November 2002, at http://ec.europa.eu/transport/modes/air/international_aviation/external_aviation_policy/doc/table_-_asa_brought_into_legal_conformity_since_ecj_judgments-_january_2013.pdf

[232] The European Commission and ASEAN wanted to take the aviation cooperation between them to a new level by negotiating a comprehensive air transport agreement between the EU and ASEAN. In this relation a two-day EU-ASEAN Aviation Summit in Singapore was scheduled for February 2014 (See at http://www.asean.org/asean/external-relations/european-union).

7.5.2 Regulatory Trends in the Development of EU Competition Policy

Liberalisation has had the tendency to make greater progress within regions due to deregulation, greater cultural and economic links, or a combination of these factors. This has led to the forming of a European market, a North American market, a Southeast Asian market and a Latin American market. The increased global competition among airlines required the creation of new, bigger size of players which are able to access global markets. However, the ongoing regulatory restrictions in countries limit the ability of individual carriers to achieve this without partners.

As a result of the liberalization and integration processes in Europe in the last 20 years, the European market has transformed into a totally open, integrated and extremely competitive air transport market. This process was accompanied by the development and adoption of stringent antitrust, merger control and State aid legislations aimed at ensuring a level playing field among aviation stakeholders and by the reinforcement of pro-competitive effects of liberalisation.

The process of consolidation continued in the European and global air transport scene in 2013. The main antitrust concerns of the Commission were related to the possible anti-competitive impact of the transatlantic joint ventures within the three major global airline alliances (i.e. Oneworld, Star and SkyTeam), including primarily strong European and American airlines. In such cases the Commission worked closely with the US Department of Transportation, which is responsible for issuing antitrust immunity according to the US law. The former continued also to engage in close cooperation with National Competition Authorities (NCAs) to ensure a coherent application of the EU antitrust rules. Last but not least, efforts were also directed towards extending and enriching the co-operation between the EU and third countries within the International Competition Network (ICN).

In the sphere of merger control, during 2013, the Commission also preserved its stringent approach on a number of controversial mergers in the air transport sector and did not prohibit deals where no suitable remedies were proposed. Cases like the UPS/TNT and Ryanair/Aer Lingus III prohibited mergers conveyed the message that merging parties in concentrated industries should pay a lot of attention upfront on remedy-design and strategic approach , because DG Competition will continue in the future to hold out for remedies which are able of resolving competition concerns thoroughly. Last but not least, another important development particularly in the Commission's remedy policy was the move towards even more active cooperation with competition authorities from all over the world, such as MOFCOM and DOJ.

In the State aid aviation domain, the tendency of the Commission's increased scrutiny of aid granted to regional airports and low-cost carriers continued. The in-depth investigations opened by the Commission into a number of state aids cases in CESE showed that the region is experiencing unprecedented structural changes which need to be addressed adequately and urgently.

7.6 Regulatory Trends in non-EU Regions and ICAO

There has been a steady development of air transport liberalization (with 35% of country-pairs and 58% of frequencies covered by liberalization in 2012). However, the degree of liberalization varies widely among the regions. Africa, Europe and North America show a more liberal picture, while Asia-Pacific remains still more conservative in this respect. The degree of liberalization is also different between intra- and inter-

regional levels, as well as between high and low traffic routes[233]. In addition, the opportunities created by liberalization might not necessarily match the commercial interests and business priorities of airlines, at least not in the short term.

7.7 The Key Role of ICAO

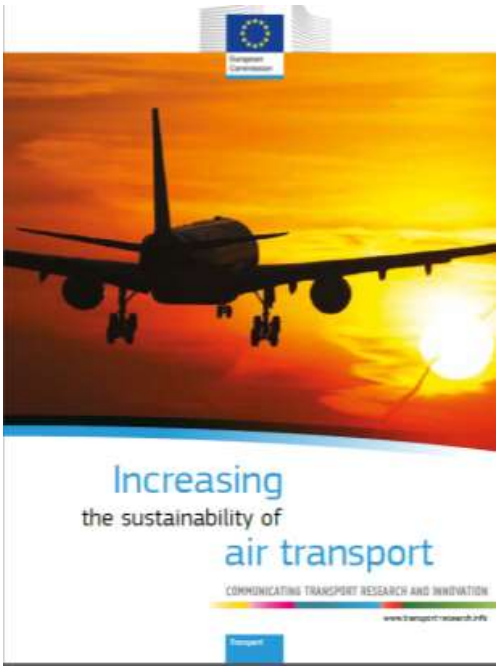
ICAO is expected to play a leading role in modernising the existing framework governing the global aviation market and in developing a more appropriate economic regulatory framework for the global aviation sector, such as in the areas of liberalising ownership and control of airlines. There are calls for the UN body to develop a multi- or plurilateral instrument, in order to ensure a world-wide level playing field and framework for fair competition. As an important event for making tangible progress in this respect was the Sixth Worldwide Air Transport Conference on Sustainability of Air Transport, which took place at ICAO's headquarters in March 2013.

Another very important topic which was very high on ICAO's agenda in 2013 was the need to address global emissions from international aviation. A very important milestone in this respect was the one adopted during the 38thICAO Assembly Resolution A 38-18, which includes a decision for the development of the elements of a global Market-Based Measure (MBM) for approval by the 39th ICAO Assembly in 2016. The technical work on the scheme has already started but many political issues between ICAO Member States still need to be overcome.

[233] Liberalization of ASAs has been more advanced on high traffic country-pairs than on country-pairs with lower traffic volumes.

8 Environment and Sustainable Development

8.1 Introduction



"Air transport contributes significantly to economic growth and development, and to integration and cohesion in the European Union. With continuing increases in passenger movements and freight volumes, the challenge is to facilitate sustainable growth in air transport while limiting environmental impacts and ensuring the highest safety and security for passengers and freight."

Transport Research and Innovation Portal (TRIP) consortium on behalf of the European Commission's Directorate-General for Mobility and Transport (DG MOVE), 2013[234]

Air transport continues to make a significant contribution to economic growth and social development. As well as being the most effective and reliable way to transport goods and freight over long distances, air travel provides jobs and brings countries and people closer together. The environmental challenges remain and an increasing number of initiatives are emerging to facilitate the sustainable development of aviation.

Aircraft noise remains the biggest issue affecting people living around airports. The need for airports to be good neighbours is being used as leverage by regulators where airport expansion is an ambition. Although technological and operational improvements continue, the rates of growth in air traffic present ongoing challenges to maintaining environmental performance and safety.

Climate change and carbon emissions continue to be the main issue influencing perceptions on the growth of aviation; increasing flight numbers and airport expansion. It is reductions in Greenhouse Gas (GHG) emissions that form the focus of aviation activities; from reducing the need for aircraft fuel through efficiency measures or use of alternative fuels, to minimise emissions from airport infrastructure or schemes to trade or off-set emissions. The major focus and the largest benefits for aviation are in managing global GHG emissions; this can also bring positive impacts for local air quality.

This chapter provides an overview of the global framework related to environment and sustainability issues for aviation reporting extracts from the sources mentioned on key topics. Progress on initiatives relevant to Europe is identified and good practice from the rest of the world is captured.

[234] http://www.transport-research.info/Upload/Documents/201310/20131031_194954_80523_PB06_WEB.pdf

8.2 Global Framework

8.2.1 International Civil Aviation Organisation

The most significant ICAO activity in 2013 was the 38th Session of the ICAO Assembly which took place from 24 September to 4 October 2013 in Montreal[235]. These sessions occur approximately every three years. The Session adopted Resolution A38-18: Consolidated statement of continuing ICAO policies and practices related to environmental protection – climate change. The Resolution reflects progress from the 37th Assembly in 2010 and includes the following components:

- Reaffirmation of collective global aspirational goals for the international aviation sector namely improving fuel efficiency by 2% per year and keeping net CO2 emissions at the same levels from 2020 onward.
- Further work to explore the feasibility of a long-term global aspirational goal for international aviation.
- Maintenance and enhancement of appropriate standard, methodologies and a mechanism to measure/estimate, monitor and verify global greenhouse gas emissions from international aviation.
- Development of a global CO2 Emissions Standard for aircraft, aiming for adoption by the ICAO Council in 2016.
- Maintenance and update of guidance on air traffic management improvements and other operational measures to reduce international aviation emissions and continued development of tools to assess their benefits.
- Development of coordinated national policy actions to accelerate the appropriate development, deployment, and use of sustainable alternative fuels for aviation with measures to ensure the sustainability of alternative fuels for aviation.
- Development of a global Market Based Mechanism (MBM) scheme for international aviation, which addresses key design elements, including a means to take into account the special circumstances and respective capabilities of States, in particular developing States, as well as the implementation mechanisms from 2020, for decision by the 39th Assembly in 2016.
- Voluntary preparation and update of States' action plans on CO2 emissions reduction activities, for submission to ICAO by June 2015, and to be made publically available.
- Enhancement of ICAO's strategy for capacity building and assistance, including support for the development and update of States' action plans, as well as the mechanisms to facilitate access to financial resources.

Technology: Awareness is one of the first steps to improvement and the ICAO Carbon Emissions Calculator is an easy to use tool that allows passengers to estimate CO_2 emissions, enabling users to calculate the carbon footprint of their flight. The app is an official tool of the UN in support of the Climate Neutral Initiative.

[235] http://www.icao.int/meetings/a38/Pages/default.aspx

8.2.2 State Action Plans Initiative

ICAO has been developing a capacity building strategy since 2010 to assist States in developing action plans to reduce CO_2 emissions from international aviation. ICAO developed an action plan template and a web interface for national action plans, to provide a step-by-step approach to help develop action plans and submit them (online) to ICAO.

Around 60 States had submitted action plans to ICAO (by the end of August 2013), representing approximately 80% of international revenue tonne-kilometres (RTKs) with another 20 States committing to submitting their plans by the end of 2013. Approximately one third of the submitted plans are available on the ICAO public website[236].

The actions plans were built on selections from a “basket of measures” in their jurisdiction to limit or reduce CO_2 emissions from aviation. States selected measures to implement through policies, programmes and activities. The “basket of measures” contained initiatives relating to:

- Aircraft-related technology development
- Alternative fuels
- Improved air traffic management and infrastructure use
- More efficient operations
- Economic or market-based measures
- Regulatory measures

8.2.3 Global Market Based Mechanism

In October 2013 the Assembly of ICAO agreed on a roadmap for developing a global market-based mechanism (MBM) to tackle aviation emissions. The intention is for a global MBM is to be finalised at the next ICAO Assembly in 2016 and implemented by 2020.

The MBM is not intended to be a stand-alone solution. A number of technical and operational measures to reduce emissions will accompany new procedures to promote more advanced technology, such as better alternative aviation fuels and better procedures for air navigation.

A roadmap for adopting MBM represents a major success following pressure from the EU for international action over a number of years. It does trigger changes to the aviation activities covered by the European Union Emissions Trading System (EU ETS) with amendments being made to the EU ETS Directive for 2013-2016. It follows on from the April 2013 'stop the clock' decision that was adopted to promote progress on global action at the 2013 ICAO Assembly. The EU ETS is further discussed in Section 8.9.

8.2.4 The Atlantic Interoperability Initiative to Reduce Emissions

The Atlantic Interoperability Initiative to Reduce Emissions (AIRE) initiative is a joint commitment by the European Commission and the Federal Aviation Administration (FAA) to coordinate modernization

[236] http://www.icao.int/environmental-protection/Pages/action-plan.aspx

programs for air traffic control infrastructure – SESAR in Europe and NEXTGEN in the United States – with the aim of improving operational procedures which affect greenhouse gas emissions.

AIRE is the first large-scale environmental initiative bringing together aviation stakeholders from both sides of the Atlantic. On the European side alone, AIRE currently comprises stakeholders working on 18 projects which overall involve 40 airlines, airport, air navigation service provider and industry partners. Seven of the 18 projects focus directly on complete green flights (i.e. gate-to-gate, instead of on a particular phase of flight). The AIRE 3 cycle continues work through 2012-2014.

AIRE is integral to the air transport sustainable development strategy of the European Commission which is based on the following three pillars[237]:

- Modernise the air traffic management system, by means of SESAR or more generally the Single European Sky and environmental initiatives such as AIRE;
- Improve the environmental performance of aircraft, through programmes such as Clean Sky (see below) or studies on the use of biofuels;
- Economic mechanisms for trading emission rights provide incentives for greener operations.

8.2.5 The Asia and Pacific Initiative to Reduce Emissions

The Asia and Pacific Initiative to Reduce Emissions (ASPIRE) is a partnership of air navigation service providers focused on environmental stewardship in the Asia-Pacific region. ASPIRE partners pledge to adopt and promote best practices that have proven success in achieving a reduction in greenhouse gasses, as well as to the development of other initiatives to deliver environmental benefits.

The Asia-Pacific region is witnessing continued increases in air traffic and ASPIRE retains a focus on helping to make this growth as sustainable as possible through a continued focus on reducing aircraft carbon emissions.

As with AIRE, it is air traffic management that provides the opportunity for wide collaboration. Civil Aviation Authority of Singapore (CAAS) recently launched ASPIRE's Centre of Excellence for ATM programme; a hub for research and development activities to develop ATM solutions to meet the needs of Singapore and the Asia-Pacific.

Initiatives reported in the ASPIRE Annual Report in 2013 include[238]:

- In November 2012, Airways NZ, in collaboration with airlines, airports and the NZ regulator introduced PBN/RNP AR procedures and routes in the complex and terrain constrained Queenstown Basin. The major change to the operations at Queenstown was segregating arrivals from departures,

[237] http://ec.europa.eu/transport/modes/air/environment/aire_en.htm

[238] http://www.aspire-green.com/mediapublications/docs/annual_report2013.pdf

something that previously would be difficult to achieve. The introduction of the new RNP-AR procedures had the direct effect of increasing the IFR capacity from 5 to 12 movements per hour, increasing the payload by up to 2,500kg while significantly reducing ground and airborne holding times. It is estimated that the reduction in holding alone equates to a minimum annual fuel saving of 500,000 kg fuel and reduced CO2 emissions in excess of 1,500,000 kg.

- The Federal Aviation Administration (FAA) is working with JCAB to begin a limited westbound Dynamic Airborne Reroute Procedure (DARP) trial within the Oakland FIR and Fukuoka FIR. A westbound DARP trial between Hawaii and Japan was implemented on 30 April 2011. A total of 64 DARPS were granted between Dec 2011 and May 2012 with an average savings of 663 pounds of fuel and three minutes saved per flight.
- The FAA is continuing to develop the Automatic Dependent Surveillance – Contract Climb-Descent Procedures (ADS-C CDP) procedure in the Pacific. ADS-C CDP utilizes existing user equipage and ATC capabilities to allow more oceanic flights to achieve their preferred vertical profiles. ADS-C CDP is part of the Oceanic Trajectory Based Operations (OTBO) program, a critical NextGen capability that addresses current performance gaps in the area of capacity, productivity, and efficiency in the oceanic environment. Operational trials for the use of the ADS-C CDP began on February 15, 2011 in the Oakland FIR and ended February 15, 2013. During the two-year timeframe of the trials, the ADS-C CDP was successfully utilized eight times. Due to the inherent limitations of the manual execution of the procedure, there are no plans to extend the manual trial.

8.3 European Framework

The research agenda across Europe is coordinated by ACARE: Advisory Council for Aeronautics Research in Europe which was launched in 2001 to develop and maintain the strategic research agenda[239]. ACARE has around 40 member organisations and associations including representation from the Member States, the European Commission and stakeholders: manufacturing industry, airlines, airports, service providers, regulators, research establishments and academia.

The Strategic Research and Innovation Agenda (SRIA) was launched in 2012 and provides an updated strategic roadmap for aviation research, development and innovation developed by ACARE that accounts for both the evolution of technology as well as radical technological changes. The ACARE 'flight path 2050 goals' provide the framework for future innovation and progress for aviation in Europe[240]:

[239] http://www.acare4europe.com/

[240] http://www.acare4europe.com/

Figure 8.1: ACARE – Flight Path 2050 Goals

Source: ACARE

8.4 Air Traffic Management

Air Traffic Management is central to helping to improve the sustainability of air travel and to reduce environmental impacts. Effective air traffic management can reduce the fuel burnt, reduce aircraft noise, assist in safe passage and optimise airspace, therefore making the most of existing aircraft capacity. The sections above on AIRE and ASPIRE show progress in ATM in other regions.

The EU Single European Sky (SES) initiative[241] was launched by the European Commission in 2004 and sets the architecture for air traffic management. SESAR (Single European Sky Air Traffic Management Research) is the programme that will deliver the new generation of air traffic management in Europe by consolidating and developing systems to provide capacity and maintain safety over a 30 year horizon. The project is being carried out in three phases:

- The first phase (2004-2008) has delivered a master plan for air traffic management setting out content, development and deployment plans for the Single European Sky.
- The second phase (2008-2013) produced a new generation of technological systems, components and operational procedures. Because of the large number of stakeholders in SESAR and the scope of

[241] http://ec.europa.eu/transport/modes/air/single_european_sky/index_en.htm

financial resources and technical expertise required, the SESAR Joint Undertaking has been set up to oversee fund management which will need to be extended.

- The third phase is the deployment phase (2014- 2020) in which the harmonized and interoperable components of the Single European Sky will be implemented.

The European ATM Master Plan is the roadmap driving the modernisation of the ATM (to achieve the performance objectives of SES) and governing the transition from SESAR to deployment. The plan contains roadmaps for the operational and technological changes required from all stakeholders; coordinating the timing of the introduction of new technologies and procedures, as well as efficient integration with other international ATM measures.

With a view to implementation, the Commission adopted a Regulation in May 2013 to establish governance and incentive mechanisms to facilitate the deployment of Air Traffic Management functions that are considered essential for the performance improvement of the EU's ATM system.

To drive modernisation of Europe's ATM system, the SES Performance Scheme has been introduced, covering four performance areas: cost efficiency, safety, capacity and environmental impact. For the 2012-2014 period, the expected environmental outcome is the carbon-neutral growth of aviation (with reference to air navigation), through better airspace management. For example, shorter flights achieved through 0.75% reduction in the average horizontal flight extension (compared to 2009 baseline)[242].

8.5 Airports

8.5.1 Airport Carbon Accreditation (Europe)

Airports Council International (ACI) EUROPE is a global association of airport operators which represents over 400 airports across Europe. The Airport Carbon Accreditation scheme aims to help airports in committing to managing and reducing their carbon emissions, with the ultimate goal of being carbon neutral[243].

The scheme has four levels of certification. To achieve certification, airports must have their carbon footprints independently verified in accordance with ISO14064 (Greenhouse Gas Accounting) and evidence provided on carbon footprint and supporting carbon management processes. The four levels of certification are: (1) Mapping: footprint measurement; (2) Reduction: carbon management towards a reduced carbon footprint; (3) Optimisation: third party engagement in carbon footprint reduction; and (4) Neutrality: carbon neutrality for direct emissions by offsetting.

The scheme was launched in June 2009. The programme publically recognizes participating airports best practice carbon management practices through four progressively difficult levels of accreditation award, each requiring increasing levels of engagement from the airport company and its stakeholders.

[242] http://europa.eu/rapid/press-release_MEMO-12-576_en.htm?locale=en

[243] http://www.airportcarbonaccreditation.org/

In its fourth year of operation, Airport Carbon Accreditation continued to grow in both Europe and Asia-Pacific with 22 new airports becoming accredited for the first time. There were also 11 upgrades and 53 renewals. 'Year 4', ended in May 2013, and at that point a total of 75 European airports were accredited representing over 58% of European air traffic, or nearly 930 million passengers.

New entrants to the programme include; Palma de Mallorca and Malaga, Rome Ciampino, Lyon Airport, Le Bourget (Aeroports de Paris), Koln-Bonn, London City, four Swedavia Airports: Kiruna, Lulea, Ronneby and Visby, ANA-Beja, Tallinn Airport, Tirana Airport, Vienna Airport and Zagreb Airport.

Eindhoven Airport - certified at the 'Neutrality' level of the programme. This means that Eindhoven Airport has performed its own airport processes in a carbon-neutral manner by compensating for its own residual emissions. The airport entered the programme a few of years ago and progressed through the levels of the programme.

Athens International Airport - the 2013 Eco-Innovation Award, which is awarded by the independent Advisory Board of Airport Carbon Accreditation, went to Athens International Airport. The award was announced during the ACI Annual Conference & Exhibition, with the judges commenting:

"The airport scored highest on criteria such as stakeholder engagement, staff training and innovation. Its hard work to lower its CO_2 emissions confirms that despite economic pressures, the company continues to deliver environmental management systems that go beyond regulatory requirements."

In November 2013, The Airport Carbon Accreditation was recognised as one of the top three low carbon economy initiatives in Europe as part of the European Commission's communication campaign on climate solutions: 'A world you like. With a climate you like'. A total of 269 projects from across Europe entered the competition and Airport Carbon Accreditation achieved over 11,000 votes during the public part of the contest. The EU Commissioner for Climate Action (Connie Hedegaard) congratulated ACI EUROPE representatives at the Sustainia Award Ceremony in Copenhagen[244].

8.5.2 Airport Carbon Accreditation (outside Europe)

At its ninth meeting in February 2013, ICAO's Committee of Aviation Environment Protection (CAEP) noted the development of Airport Carbon Accreditation and encouraged those airports that are located in a region where the programme is available, to become accredited[245].

ACI Asia-Pacific is the Asia-Pacific region of Airports Council International and has 96 members operating over 510 airports in 42 countries. The airport accreditation scheme was extended to the Asia-Pacific region in November 2011. Nine Asia-Pacific Airports are now accredited, totalling 130 million passengers, or 15% of Asia-Pacific's air traffic. Altogether, these accreditations represent nearly 22% of worldwide passenger traffic.

[244] http://www.sustainia.me/sustainia-action-forum/

[245] http://www.icao.int/Newsroom/Pages/ICAO-environmental-protection-committee-delivers-progress-on-new-aircraft-CO2-and-noise-standards.aspx

In March 2013 Hong Kong International Airport was the first airport in the Asia-Pacific region to achieve the 'Optimisation' level of certification[246]. Later in the year, Bangalore and Hyderabad upgraded to Level 3 (Optimisation).

Adelaide Airport announced that it is seeking accreditation at Level 1, being the first Australian airport to enter the scheme.

In June 2013, the airport carbon accreditation scheme was extended to Africa, in partnership with ACI AFRICA. Enfidha Hammamet airport (TAV) in Tunisia is the first African airport certified by the programme[247].

The figure below outlines the aggregated carbon dioxide emissions footprint and reduction from all participating airports. The figure shows the increasing number of participants joining the scheme and operating at the early levels of accreditations. The figure also illustrates the ongoing challenge to offset carbon emissions to achieve neutrality.

[246] http://www.airportcarbonaccreditation.org/airport/participants/asia-pacific.html

[247] http://www.airportcarbonaccreditation.org/airport/participants/africa.html

Figure 8.2: Airport Carbon Accreditation – Total Emissions 2011-2012 and 2012-2013 comparison

Variable	2011-2012		2012-2013	
	Emissions	Number of Airports	Emissions	Number of Airports
TOTAL SCOPE 1 AND 2 EMISSIONS				
Aggregate carbon footprint for 'year 0'[1] for emissions under airports' direct control (all airports)	2,514,947 tCO_2	59	2,553,869 tCO_2	75
Carbon footprint per passenger	3.22 $kgCO_2$		2.75 $kgCO_2$	
SCOPE 1 AND 2 EMISSIONS REDUCTION[2]				
Aggregate reduction in emissions from sources under airports' direct control (Level 2 and above)	48,676 tCO_2	23	140,009 tCO_2	43
Carbon footprint per passenger	0.08 $kgCO_2$		0.19 $kgCO_2$	
TOTAL SCOPE 3 EMISSIONS[3]				
Total carbon footprint for 'year 0' for emissions sources which an airport may guide or influence (level 3 and above)	8,299,743 tCO_2	13	12,176,083 tCO_2	26
SCOPE 3 EMISSIONS REDUCTION				
Aggregate reductions from emissions sources which an airport may guide or influence	365,528 tCO_2	10	30,155 tCO_2	26
TOTAL EMISSIONS OFFSET				
Total emissions offset (Level 3+)	79,964 tCO_2	8	66,724 tCO_2	15

Source: Airports Council International

8.6 Manufacturers and Airlines

Operational practices and market mechanisms can provide positive influences, but there needs to be complementary advances in the practical manufacturing and operation of aircraft in order to deliver environmental improvements. Increasingly, collaboration between manufacturers and airlines is driving innovation.

8.6.1 Clean Sky 2 Initiative

The Europe-focused Clean Sky JTI (Joint Technology Initiative) was born in 2008 and represents a unique Public-Private Partnership between the European Commission and the industry, bringing together companies, universities, public laboratories and small and medium sized enterprises[248]. The initiative aims to develop and demonstrate new break-through technologies for the civil aircraft market to cut aircraft emissions and noise. This is seen as a way to help secure the future international competitiveness of the European aviation industry. Europe currently has a world market share of 40% and the global aviation sector is expected to grow by 4-5% per year.

Specific objectives include:

- Increasing aircraft fuel efficiency, thus reducing CO2 emissions by 20 to 30%
- Reducing aircraft NOx and noise emissions by 20 to 30% compared to “state-of-the-art” aircraft entering into service as from 2014.

It is estimated that the technology developments already made or in progress could reduce aviation CO_2 emissions by more than 20% with respect to baseline levels (in 2000) which represents an aggregate reduction of two to three billion tonnes of CO_2 over the next 35 years.

All technologies and demonstrators developed in the Clean Sky programme will represent major steps forward. Examples so far include the Open Rotor, laminar wings, innovative rotor blades and high compression engine for light helicopters, innovative ice detector sensors and advanced avionics systems.

8.6.2 Aerospace Multidisciplinary-Enabling Design Optimisation

The UK’s University of Leeds' Faculty of Engineering is leading an EU research project to develop the design tools needed for the next generation of environmentally friendly aircraft. The AMEDEO (Aerospace Multidisciplinary-Enabling DEsign Optimisation) project aims to improve the design of aircraft engines and fuselages to improve fuel and build efficiency[249]. The University will work with other top industry and academic partners across Europe.

Funded as part of the EU’s Marie Curie research programme, AMEDEO will train 13 early-stage research engineers in Multidisciplinary Design Optimisation (MDO). The technique has been identified by the European Commission as critical for the future sustainability of the European aerospace industry.

8.6.3 Innovations by Airbus

In August 2013, Airbus[250] and Air Canada received aeronautical publication Air Transport World’s Eco-partnership Award in honor of their successful “Perfect Flight” collaboration.

[248] http://www.cleansky.eu/content/page/towards-clean-sky-2

[249] http://www.amedeo-itn.eu/news-and-resources/press-releases/

[250] http://www.airbus.com/

The first North American “Perfect Flight” took place during June 2012 in a joint effort between Airbus and Air Canada. This activity utilized an A319 flying from Toronto to Mexico City, with the aircraft powered by a 50% sustainable aviation fuel blend made with used cooking oil. Further enhancing this flight’s eco-efficiency were streamlined ATM procedures, use of Continuous Descent Approach (CDA) into the destination area, single-engine taxiing on the ground and external cleaning for improved aerodynamics.

Airbus and Air France completed the world’s first “Perfect Flight” in October 2011 by putting into practice multiple elements of the Airbus environmental roadmap – including the use of sustainable aviation fuels, optimized ATM and lighter cabin. The Toulouse-Paris flight was performed by an Airbus A321, and as a result, the aircraft emitted half the CO_2 of a regular flight.

For its aircraft product line, Airbus continued to work on quieter and more fuel efficient jetliners. Airbus considers its A380 as a benchmark for fuel efficiency and low noise levels, and such new-generation jetliners as the A350 XWB will improve performance further, including 25% less fuel consumption than current-generation aircraft. In context of the proposed and more stringent CAEP8 (Committee on Aviation Environmental Protection) constraints applied from 2013, the A350 XWB achieves compliance with the requirements against limits for hydrocarbons, carbon monoxide and mono-nitrogen oxide. A350 XWB is also a quiet neighbour; it is up to 16dB below the ICAO (International Civil Aviation Organization) Chapter 4 limit.

In December 2013, Airbus reported signing a memorandum of understanding (MoU) with EGTS International, a joint venture company between Safran and Honeywell Aerospace, to further develop and evaluate an autonomous electric pushback and taxiing solution for the A320 models. EGTS (Electric Green Taxiing System) for the A320 is referred to as eTaxi and would allow the aircraft to push-back from the gate without a tug, taxi-out to the runway, and return to the gate after landing without operating the main engines. Airbus states that the eTaxi option will offer several operational and environmental benefits for the A320 models:

- Per trip, the projected fuel savings and CO2 reductions would be approximately four percent;
- It would contribute to significantly more efficient taxiing operations and save around two minutes of time on pushback;
- Taxiing-related carbon and nitrous oxide emissions would be cut by more than half.

8.6.4 Innovations by Boeing

In June 2013, Boeing published a report setting out the environmental improvements it had made over the preceding five year period[251]. The report highlighted progress made in reducing hazardous waste, carbon dioxide emissions, energy use and water use. The report reiterates Boeing’s commitment to zero carbon growth by 2017 and highlights the environmental credentials of the 787 Dreamliner (20% more fuel-efficient than other airplanes of comparable size). The report also notes the completion of the first ecoDemonstrator project.

Boeing’s ecoDemonstrator project accelerates technology that will improve the environmental performance and sustainability of the aviation industry. Each ecoDemonstrator airplane tests and applies new technologies and materials that make Boeing aircraft cleaner, quieter and more fuel-efficient.

[251] http://www.boeing.com/aboutus/environment/environment_report_13/

A key part of the ecoDemonstrator project is a partnership with the airlines, aviation industry and the Federal Aviation Administration's CLEEN (Continuous Lower Energy Emissions and Noise) program. Over the next several years, the FAA will help fund parts of the project; for example, testing of airframe and engine technologies designed to increase the reduction of greenhouse gas emissions and community noise.

The ecoDemonstrator project's inaugural flight in 2012 and the programme continued through 2013. The used a Next-Generation 737-800 in partnership with American Airlines to test a range of innovations, including:

- Wing-adaptive trailing edges to reduce noise and improve fuel efficiency at take-off, climb and cruising altitudes.
- A regenerative hydrogen fuel cell as an alternative source of cabin power with the potential to reduce fuel consumption and carbon emissions.
- Advanced flight trajectory and inflight planning technology that enables more fuel-efficient routes and future improvements in air traffic management.
- New technologies tested as part of the second ecoDemonstrator include an exhaust nozzle made of ceramic matrix composite material, designed to make engines quieter, lighter and more efficient.

Other innovations during 2013 include:

- Boeing's insulated galley carts (food and drink carts that don't use traditional chillers and are significantly lighter, which reduces aircraft weight and therefore fuel use and carbon emissions) won a 2013 Crystal Cabin Award, an international environmental recognition.
- The hydrogen-powered Phantom Eye completed its third flight in April 2013 and demonstrated a cleaner burning propulsion system that leaves only water in the atmosphere.
- The Boeing X-48C research aircraft completed its 30th flight in early 2013, which was part of a year-long test program that validated the aerodynamic characteristics of the blended wing body design concept.

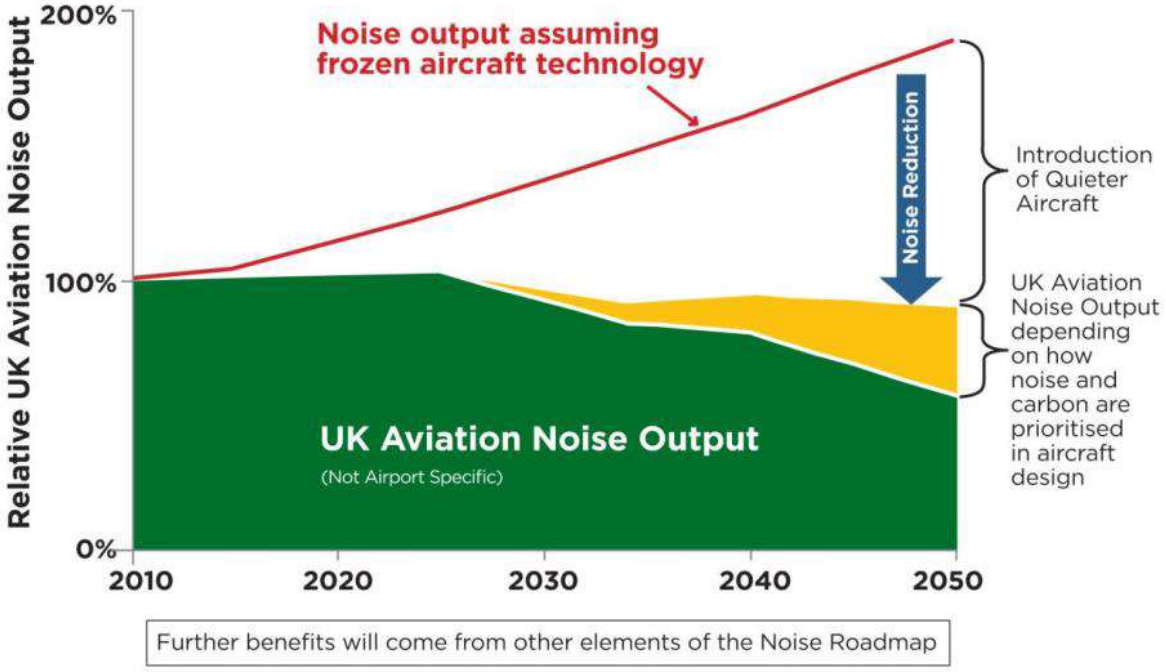
8.7 Aircraft Noise

Aircraft noise remains the priority issue for people living near to airports and the main community concern related to the operation and expansion of airports. As the aviation sector grows, airports get busier and pressures on land use rise, it is likely that aircraft noise will remain a dominant issue across Europe. Two case studies of European practice are considered here.

8.7.1 UK Sustainable Aviation Noise Road Map

Sustainable Aviation (SA) was launched in 2005 and comprises representatives of UK airlines, airports, manufacturers and air navigation service providers. In April 2013, Sustainable Aviation launched a Noise Road-Map[252]. This Road-Map is structured as a toolkit for individual areas of the UK aviation industry to assess and implement measures to reduce noise from aircraft operations. The Road-Map shows what could be achieved in the period to 2050, taking account of the most recent evidence and a realistic approach.

Figure 8.3: Sustainable Aviation Noise Road Map – Potential for reduction in aviation noise output from engine technology.



Source: Sustainable Aviation, UK.

The Noise Road-Map prioritises four key areas of work to reduce noise before operational restrictions should be considered:

- **Aircraft and engine technology**: Through improved technology aircraft operations today are 75% quieter than they were 50 years ago. New aircraft types such as the Airbus A380 and the Boeing 787 offer significant noise reductions compared to their predecessors. Further design improvements such as blended wing body and engine shielding by fuselage and tail plane offer the potential to reduce perceived noise from aircraft by 65% by 2050.

[252] http://www.sustainableaviation.co.uk/wp-content/uploads/SA-Noise-Roadmap-Publication-version1.pdf

The greatest opportunity to reduce noise output is through the design and introduction of new aircraft and engines. SA members are already involved in international research programmes, such as the EU ACARE Flightpath 2050 initiative which aims to reduce perceived noise by 65% by 2050.

- **Operational improvements**: Implementation of a range of aircraft and airspace operational techniques offers a range of noise reductions between 1dB and 5dB. The exact noise improvements experienced by local communities will vary depending on how many of the operational improvements are already used at the airport in question.
- **Land use planning**: Studies have shown that historically land use planning guidelines have not always been followed. This has resulted in more people living within noise sensitive areas around airports. SA calls on the UK Government to work with key stakeholders to address this risk, moving forwards.
- **Noise communication and community engagement**: SA believes there is an urgent need to improve ways that the issue of aircraft noise is communicated. SA presents a benchmark for constructive engagement with local communities and is committed to working with others to improve such engagement in future.

It is possible that parts of the road map journey will be accelerated as the UK Government have appointed an independent commission to examine the provision of airport capacity in England[253]. The Airports Commission produced its interim report in December 2013, shortlisting three options. Noise is a major issue for the Airports Commission; the Commission is considering a 'noise scorecard' approach to capture a range of noise metrics, including monetising potential impacts on human health.

8.7.2 Fraport Incentive Program for Airlines

Fraport launched an incentive program in December 4, 2013[254]. Under the FRAConnect scheme, Fraport AG will reward airlines at Frankfurt with retroactive reductions in airport charges during 2014 and 2015, if they achieve passenger growth of more than one percent per year on international routes. However, this shall only apply if airlines deploy advanced and low-noise aircraft to achieve that growth.

Fraport considers itself as a leader in airport charges based on noise categories. Quiet aircraft are charged less, while loud aircraft pay significantly more. This additional incentive program underscores how consistently airport charges are used as a way to reward airlines that deploy the quietest aircraft possible. Domestic traffic has been intentionally excluded from the new program which is considered to be consistent with its growth plans for European and international traffic.

Passenger growth is measured on the basis of the previous year's volume – with continental and intercontinental traffic treated separately. Fraport only takes into consideration the portion of passenger growth that the airline achieves using low-noise aircraft types. For continental routes, this means aircraft types classified within noise categories 1 through 11. For intercontinental routes, this means aircraft types grouped in noise categories 1 through 12. The number of noise categories has also been increased, from 12 to 16, in order to better ascertain the actual noise created by individual planes. The idea is to charge more for noisy aircraft and thus provide greater incentive for airlines to deploy quieter planes. The calculation method has also been refined, with both take-off and landing noise being included. The Noise

[253] https://www.gov.uk/government/organisations/airports-commission

[254] http://www.fraport.de/content/fraport/de/misc/binaer/kompetenzen/aviation-services/flug--und-terminalbetrieb/fra-connect-incentive-program/jcr:content.file/fraconnect.pdf

Rating Index (NRI) incentivizes airlines to use technologically advanced aircraft. Depending on how the individual aircraft is classified, a reduction of up to 10% on noise-related charges is granted.

Homeowners who purchased or built a residential property before there was any discussion of expansion and whose homes are now located directly below the flight path are adversely affected by the expansion of Frankfurt Airport and the changes in operation. Fraport purchases residential property where planes fly particularly low – at an altitude of less than 350m – or it pays the owners compensation. The property's purchase price is assessed by independent experts on the basis of conditions in the district before the expansion of the airport. The alternative of compensation is determined by the position of the property and its distance from the core zone affected by the incoming flights.

8.7.3 The Committee on Aviation and Environmental Protection

The ICAO Committee on Aviation and Environmental Protection (CAEP) convened in February 2013[255]. The Committee reached agreement on certification procedures for a global noise standard (and a new carbon dioxide aircraft standard). CAEP agreed on a new noise standard of 7EPNdB (Effective Perceived Noise in Decibels) below its current standard for new-design aircraft entering into service from 2017 and from 2020 for lower weight aircraft.

8.8 Alternative Fuels

A new industry-wide initiative to speed up aviation sustainable aviation fuel commercialisation in Europe has been launched by Airbus, the European Commission, leading European airlines and key European sustainable aviation fuel producers[256]. This initiative, called the “European Advanced sustainable aviation fuel Flightpath,” is committed to supporting and promoting the production, storage and distribution of sustainably produced drop-in sustainable aviation fuels for aviation use. The objective is to reach two million tonnes of production and consumption by 2020, which represents roughly four per cent of the aviation fuel used across the European Union.

Airbus’ launch of a sustainable aviation fuels roadmap has led to collaborative projects and flights with airline partners, along with the recent approval of 50% blends of biomass to liquid (BTL) and hydro processed esters and fatty acids (HEFA) fuels on commercial flights. In one partnership effort, Lufthansa performed daily sustainable aviation fuel flights using a 50 per cent blend of jatropha-based fuel in one engine on an A321.

While the recent past was marked by a series of commercial flights, the number of flights operated with alternative fuels was noticeably lower over the last year, corresponding to the fact that there is no routine production of sustainable alternative jet fuel at competitive price. To date, commercial flights have operated with especially produced batches of fuels (existing hydro processing plants for vegetable oils and animal fats are mostly dedicated to diesel fuel).

In October 2013, the 38th Session of the ICAO Assembly reaffirmed ICAO Member States’ support for the development and deployment of sustainable alternative jet fuels as part of a basket of measures to reduce

[255] http://www.icao.int/Newsroom/News%20Doc%202013/COM.4.13.EN.pdf

[256] http://ec.europa.eu/energy/renewables/biofuels/flight_path_en.htm

aviation GHG emissions[257]. Assembly Resolution A38-18 requests States to develop coordinated national policy actions to accelerate the appropriate development, deployment and use of sustainable alternative fuels for aviation, in accordance with their national circumstances. It also recognizes the need for the sustainable development of alternative jet fuels, according to the environmental, social and economic pillars of sustainability, and requests States to adopt measures to ensure sustainability.

Several conversion processes are under development and several are currently being considered for approval:

- This includes the so called "alcohol-to-jet" (ATJ) family of processes, which begins with ethanol or butanol in order to produce jet fuel grade hydrocarbons (through dehydratation, oligomerisation and hydroprocessing). This route, being pursued by a number of companies (Gevo, Swedish Biofuel, Biogy, etc.), provides access to starch and sugar feedstock for the production of jet fuel and, in a second step, to lignocellulosic feedstock through enzymatic hydrolysis into sugar. In addition, ethanol production is also possible through fermentation of industrial carbon monoxide (Lanzatech, in particular, is developing such a process).
- A second fermentation route from sugar, Direct Sugar to Hydrocarbon (DSHC), currently under consideration by ASTM, directly produces hydrocarbons (farnesene molecules) that are upgraded in paraffins through hydroprocessing (Amyris/Total). A demonstration flight was performed in June 2013 for Paris Air Show by a team including Total, Airbus, Air France and Safran, using a10% blend of such fuel with kerosene.

Although routine production of bio-jet fuels is expected as of 2014, there is still a long road ahead before a significant volume of fuel could be made available for commercial aviation. This will require the expansion of supporting policies by countries to address, in particular, the price gap with conventional jet fuels while taking sustainability into account.

Other examples fuels from around the world of using alternative include:

- March 2013, KLM initiated the first series of regular intercontinental flights using a blend containing 20% of HEFA, made up of used cooking oil. In order to finance the price gap with conventional jet fuel, KLM launched the "Corporate Biofuel Program" which provides KLM's business customers with the opportunity to compensate their air travel footprint by contributing to the acquisition of sustainable fuel, instead of purchasing carbon credits to offset staff travel.
- In August 2013, Columbia entered into the pool of countries having performed commercial flights on alternative fuels with a LAN flight from Bogota to Cali.
- Several airlines have also pursued efforts to promote and support the development and deployment of sustainable alternative jet fuels by signing supply agreements with fuel producers (e.g. United Airlines with Alt Air and Alaska Airlines with Hawai'I BioEnergy) or direct cooperation agreements either for the development of technologies (e.g. Avianca Brasil with Byogy to support the "alcohol-to-jet" approval) or for the set-up of a production chain. The ICAO GFAAF (Global Framework for Aviation Alternative Fuels) identifies eighteen announcements of such agreements over the last three years, five being signed in 2013.

[257] http://www.icao.int/environmental-protection/GFAAF/Documents/Overview%20of%20Biojet%20Fuels%20in%202013.pdf

- In 2013, Indonesia was the first country that has set legally binding provisions for the use of biofuels in aviation. The Indonesian Green Aviation Initiative has a target to include 2% of biofuels in aviation mix by 2016.

8.9 Emissions Trading

The main instrument of EU policy to combat climate change, the EU Emission Trading Scheme (ETS), was extended to the aviation sector at the start of 2012[258]. In November 2012 the European Commission decided to "stop the clock" on implementing international aspects of ETS aviation. This was driven by a lack of international consensus on the ETS being the appropriate mechanism to manage aircraft emission – with objections from interests outside of the EU and a perception of losing international competitiveness by some interests within the EU.

To allow time for the ICAO negotiations toward agreeing an international solution and market-based mechanism for aviation emissions, the EU ETS requirements were suspended for flights in 2012 to and from non-European countries. This means that the EU did not require allowances to be surrendered in April 2013 for emissions from international flights during 2012. The obligations relating to all operations in EU will remain and compliance with EU legislation will be mandatory (with the exception of 2012). Exemptions for operators with low emissions have also been introduced.

As discussed earlier, the ICAO Assembly in October 2013 committed to develop a global market-based mechanism addressing international aviation emissions by 2016 and implement it by 2020.

Following the ICAO Assembly (also in October 2013), the Commission published its proposals to amend the aviation EU ETS Directive, for the period 2013-2016. The components of the proposal are[259]:

- Obligations under the ETS will continue to be enforced in respect of 2013 emissions from flights between airports in the EEA.
- Emissions from flights to and from countries outside the EEA will continue to benefit from a general exemption for those emissions in 2013.
- From 1 January 2014 and until the planned global MBM comes into force in 2020, aircraft operators operating flights to and from countries outside the EEA would not have to account for the emissions from these flights in 2013 at all, and would only have to account for the emissions from these flights within European airspace, rather than on the whole route, from 2014 to 2020.
- For each calendar year between 2014 to 2020, aircraft operators will have the choice to surrender allowances either on the basis of (i) the proportion of the route concerned as calculated by Eurocontrol (which will be set out in an Annex to the amending Directive); or (ii) calculations by the competent authority.

[258] http://ec.europa.eu/clima/policies/transport/aviation/index_en.htm

[259] http://www.mondaq.com/x/284726/Aviation/Aviation+Emissions+The+ICAO+outcome+and+its+impact+on+the+EU+aviation+emissions+trading+scheme

- In order to allow time to implement these new provisions, there will be an extraordinary two-year compliance cycle for aviation emissions for 2013, with data for both the 2013 and 2014 years being reported together by 30 March 2015, and allowances for these years surrendered simultaneously by 30 April 2015. Starting with 2015 emissions, an annual compliance cycle will resume.
- Emissions from flights to and from countries which are classed as "developing" and whose share of total revenue tonne kilometres of international aviation activities is less than 1%, will (for the first time) be fully exempted.
- A new minimum threshold will apply. Non-commercial operators (likely to be defined as those flights which do not carry passengers, freight or mail for remuneration) that are responsible for less than 1,000 tonnes of CO2 in a calendar year will be exempt.

The amended law provides for the Commission to report to the European Parliament and Council on the outcome of the 2016 ICAO Assembly and propose measures as appropriate to take international developments into account with effect from 2017. The EU seeks to remain as one of the main drivers for a global scheme and, although there is now consensus on having a platform, there is a considerable amount of technical work to be undertaken in advance of the next ICAO Assembly in 2016.

9 Aviation Safety and Security

9.1 Introduction

The safety section provides an overview of worldwide fatal accidents that occurred in 2013 together with a comparison and identification of trends in accident rates in the last 20 years. In addition, comment is provided to major safety developments on a regulatory and operational basis. In 2013, 26 fatal accidents were recorded in commercial aviation causing the deaths of 281 passengers and crew. In terms of fatalities, 281 represent a record low for the industry though the number of accidents at 26 was slightly higher than the 2012 historic low of 21. Efforts continue to be directed towards improving aviation safety further, particularly in Africa which is the region with the highest accident rate. The EU-Brazil agreement on Civil Aviation Safety also came into force in 2013. Worldwide, helicopter accidents are also increasingly drawing attention.

In terms of strategic safety a number of issues were in the spotlight in 2013, particularly safety vulnerabilities related to automation of the flight deck and the need for improvements in upset prevention and recovery training. The FAA published their final report on the Operational Use of Flight Path Management Systems which contains a number of recommendations for addressing these concerns. EASA published its fourth edition of Aviation Safety Plan, covering the years 2014-2017, one of the priorities being to find ways to enhance the safety of General Aviation, but without adding cost. ICAO also launched its first new Annex in 30 years (Annex 19) specifically dedicated to Safety Management.

With respect to security, in 2013 the EU updated restrictions on the carriage of liquids, aerosols and gels (LAG's) on commercial aircraft in response to technological developments and after consultation with industry stakeholders. During 2013, there were a number of high profile airport perimeter security breaches at large airports which initiated a new debate on the adequacy, regulation and provision of security detection and prevention systems at airport boundaries which will be investigated in this report. The growing risk of cyber security will also be explored as this is now widely regarded as a critical security area that requires a holistic strategy to be implemented with cooperation from the industry's governing and safety bodies.

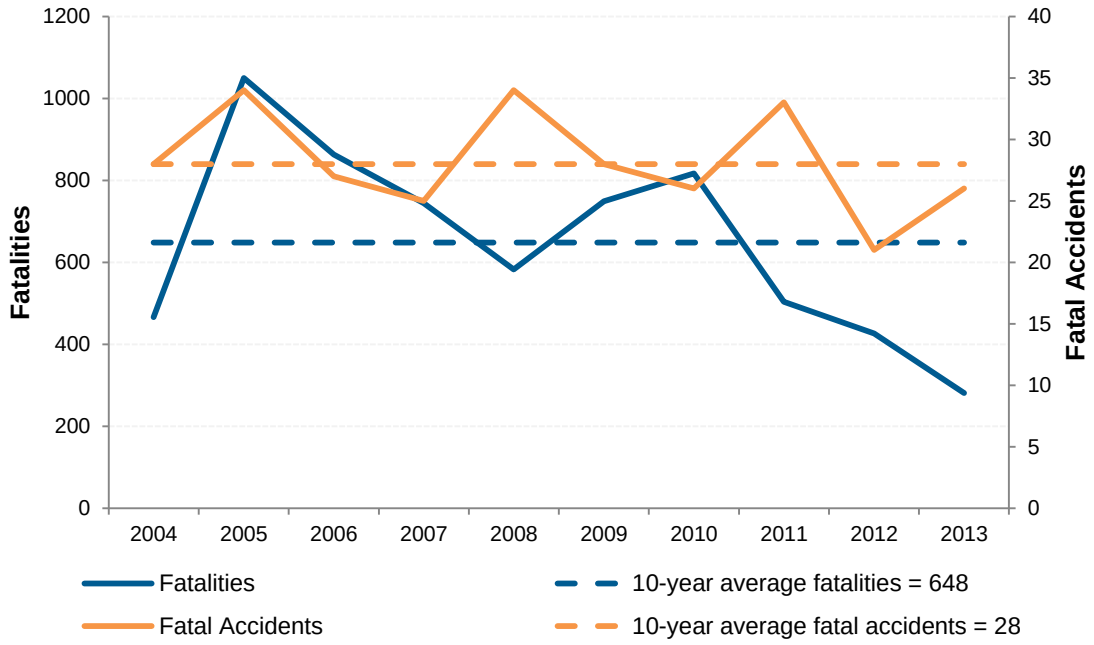
9.2 2013 Safety Review

9.2.1 Fatal Accidents Worldwide

In 2013, 26 fatal commercial accidents were reported worldwide causing the deaths of 281 passengers and crew (selective list of 2013 incidents[260] reflected in Table 9.1). This included passenger and cargo operations on a scheduled and charter basis by jets and turboprop aircraft greater than 5,700kg. In terms of the number of fatalities, 2013 was a record year with the lowest number of fatalities - 40% lower than that of the 2012, the previous record year. In comparison, 2012 reported 21 fatal accidents and 481 passenger/crew fatalities. The trend over the last 10 years in absolute terms is shown in Figure 9.1.

260 Flight International Matter of Survival 21-27 January 2014

Figure 9.1: World commercial airline fatal accidents and fatalities 2004 to 2013



Source: Mott MacDonald, Flight International based on Ascend/Flight Global, for aircraft > 5700kg.

Table 9.1: Commercial aviation fatal accidents 2013

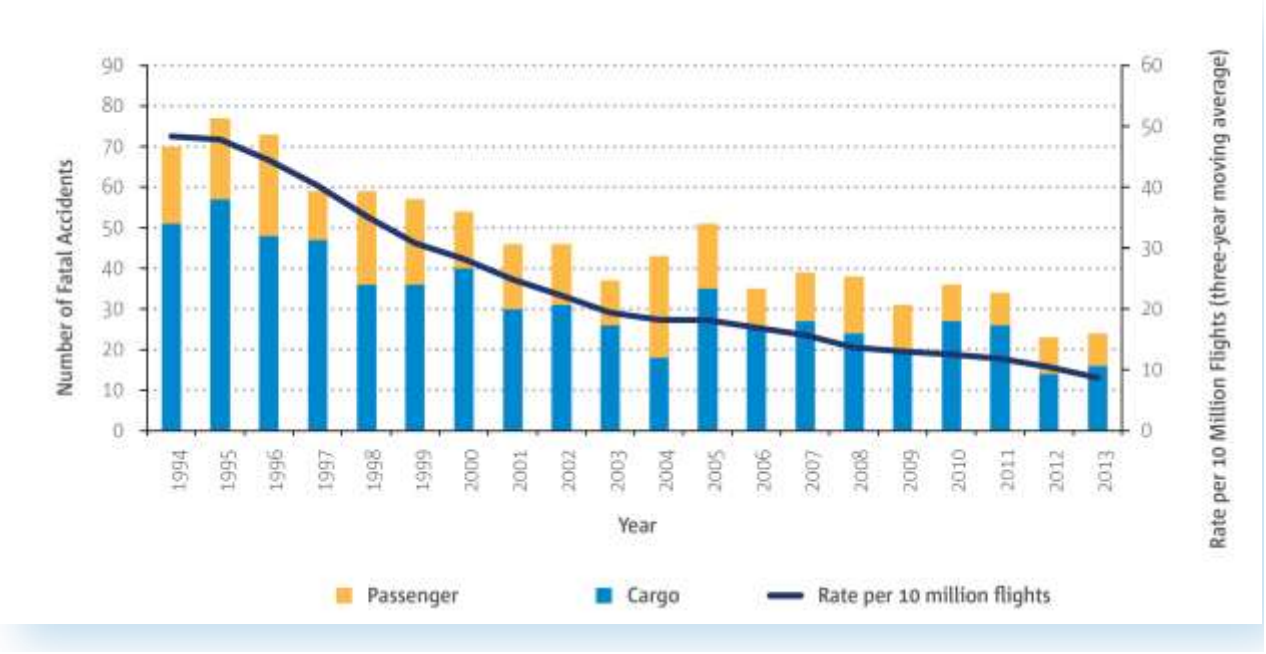
Date	Operation	Operator	A/c Type	Location	Fatalities	Phase
29-Jan	Scheduled Pax	SCAT	Bombardier CRJ200ER	Nr Almaty Airport, Kazakhstan	21	RA
06-Jul	Scheduled Pax	Asiana	B777-200	San Francisco Int Airport, USA	3	RA
17-Nov	Scheduled Pax	Tatarstan Air	B737	Kazan Airport, Russia	50	RA
29-Nov	Scheduled Pax	Linhas Aereas de Mocambique	Embraer 190	Bwabwata National Park, Namibia	33	ER
13-Feb	Non-Scheduled Pax	South Airlines	Antonov An-24	Donetsk Airport, Ukraine	5	L
06-Mar	Non-Scheduled Pax	Aero Transporte	Beech King Air	Nr Matibamba, Peru	9	ER
07-Jul	Non-Scheduled Pax	Rediske Air	DHC Turbo Otter	Soldotna, Alaska	10	TO
03-Oct	Non-Scheduled Pax	Associated Aviation	Embraer Brasillia	Lagos Int Airport, Nigeria	15	TO
25-Nov	Non-Scheduled Pax	Tropicair	Cessna Caravan	Palbuna River, Papua New Guinea	3	ER
10-Oct	Regional/Commuter	MASWings	DHC Twin Otter	Kudat Airport, Malaysia	2	L
14-Oct	Regional/Commuter	Aereo Servicio Guerrero	Cessna Caravan	Sierra de la Gigantica, Mexico	12	ER
16-Oct	Regional/Commuter	Lao Airlines	ATR 72-600	Mekong River Nr Paske, Lao	49	RA
03-Nov	Regional/Commuter	Aerocon	Fairchild Metro	Riberalta Airport, Bolivia	8	RA
10-Nov	Regional/Commuter	Bearskin Airlines	Fairchild Metro	Red Lake Airport-Ontario, Canada	5	RA
29-Nov	Regional/Commuter	Hageland Aviation	Cessna Caravan	St Mary's Airport, Alaska	4	RA
11-Dec	Regional/Commuter	Makani Kai	Cessna Caravan	Sea Nr Kalaupapa	1	C
15-Jan	Non-Passenger Flight	Martinaire Aviation	Cessna 208B	Pellston-Michigan, USA	1	C
23-Jan	Non-Passenger Flight	Kenn Borek Air	DHC Twin Otter	Queen Alexandra Mts, Antartica	3	ER
04-Mar	Non-Passenger Flight	Compagnie Africaine d'Aviation	Fokker 50	Goma Airport-DR Congo	6	AA
08-Mar	Non-Passenger Flight	Ace Air Cargo	Beech 1900C	Nr Dillingham, Alaska	2	AA
29-Apr	Non-Passenger Flight	National Air Cargo	B747-400F	Bagram Air Base, Afghanistan	7	TO/C
29-Jun	Non-Passenger Flight	Batair Cargo	Embraer Bandeirante	Nr Francistown Airport, Botswana	2	RA
14-Aug	Non-Passenger Flight	UPS	A300-600	Shuttlesworth Airport-Birmingham, USA	2	AA
25-Sep	Non-Passenger Flight	Morningstar Air Express	Cessna Caravan	Hudson Bay, Canada	1	ER
02-Dec	Non-Passenger Flight	IBC Airways	Fairchild Metro	Nr Arecibo, Puerto Rico	2	AA
26-Dec	Non-Passenger Flight	Irkutsk Aviation Plant	Antonov An-12	Nr Irkutsk 2 Airport, Russia	9	RA

Source: Flight International (AA= Airfield Approach, C= Climb, ER= En-Route, L= Landing, RA= Runway/Final Approach, TO= Take-off, TO/C= Take-off Climb)

It is noteworthy from Table 9.1 that there were 26 fatal commercial airline accidents in 2013 which was equal to that of 2010, though fatalities from these 26 accidents were far less at 281 compared to 504 in 2010. This is as a result of the higher number of accidents in 2013 which involved smaller regional/commuter aircraft and cargo flights.

Figure 9.2 taken from the European Aviation Safety Agency (EASA) Annual Safety Review 2013, review shows the global twenty year trend in fatal accidents per 10 million flights which takes into account the increase in traffic over that period.

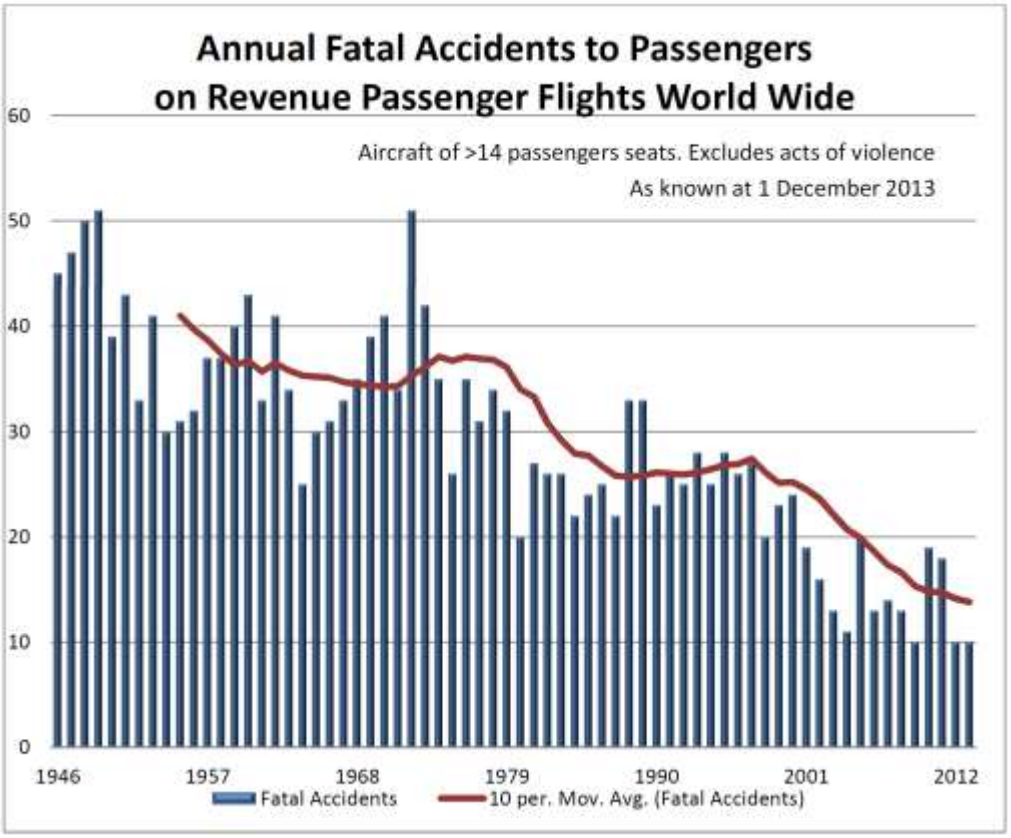
Figure 9.2: Number and rate per 10 million flights of scheduled passenger and cargo fatal accidents worldwide per year 1993-2013



Source: EASA Annual Safety Review 2013. For aircraft with MTOW >2,250kg

The long term downwards trend is even more apparent in the graph (Figure 9.3) presented in the Flightglobal 2013 Safety Survey report which shows the global rate of fatal accidents since 1946 in aircraft with seats > 14.

Figure 9.3: Annual fatal accidents to passengers on revenue passenger flights worldwide



Source: Flightglobal 2013 safety survey

In 2013, the most severe accidents (by number of fatalities) involved a Boeing 737 killing all 50 passengers and crew on board and an ATR 72-600 killing all 49 people on-board. The Boeing 737 crash was a result of an aborted unstable approach with a failed execution of a go-around causing the aircraft to fall into a near vertical dive at Kazan Airport in Russia. The ATR 72-600 accident occurred in Lao with the aircraft crashing into the Mekong River after a second attempted approach to land at Pakse Airport in stormy weather conditions.

The majority of the accidents in 2013 involved single isle and small regional/commuter aircraft which contributed to 88% of all accidents and 95% of all fatalities. However there were 3 serious accidents involving wide-body aircraft, 2 of which were purely freighter aircraft causing the death of all crew members on board and the other involving a Boeing 777 passenger aircraft at San Francisco that caused 2 fatalities.

Table 9.1 shows there were 81 fatalities from 7 accidents from Commuter and Regional Flights, of which 5 (>70%) of these fatal accidents took place during bad weather conditions. Out of these 5 accidents, 4 occurred in the final approach and landing phase of flights which remains statistically one of the most dangerous phases of flight.

The approach and landing phase again incurred the most accidents in 2013 representing 15 accidents (58%) followed by En-route 6 (23%), Take-off/Climb 5 (19%) and Ground/Other 0 (0%). The table below displays the proportion of accidents occurring in the 4 phases of flight, showing that approach/landing continues to incur the highest number of accidents in the last 4 years.

Table 9.2: 2010-2013 accidents by phase of flights

Phase of Flight	2010	2011	2012	2013	2010 to 2013
Take Off/Climb	5 (19%)	5 (15%)	5 (24%)	5 (19%)	20 (19%)
En Route	9 (35%)	12 (36%)	2 (10%)	6 (23%)	29 (27%)
Approach/Landing	11 (42%)	15 (45%)	14 (67%)	15 (58%)	55 (52%)
Ground/Other	1 (4%)	1 (3%)	0 (0%)	0 (0%)	2 (2%)
Total	26	33	21	26	106

Source: Flight International based on Ascend/Flightglobal

Aircraft manufacturers such as Airbus are introducing new technology on-board their aircraft to assist pilots in this phase of flight with the aim to reduce risk and improve safety. In 2013, Airbus received EASA and FAA certification for its new Runway Overrun Prevention System (ROPS) on its narrow body A320 family. The system computes minimum realistic in-flight landing and on-ground stopping distances and compares them to available landing distances in real time. Using weather, runway condition and topographic data in addition to aircraft data, ROPS can provide advance alerts to pilots to assist the decision making process and/or the timely application of stopping means on touchdown. This technology has been previously certified on the A380; however the introduction to the A320 represents a far greater potential safety improvement as there are over 5,500 A320 aircraft in operation and over 4,200 on order.

9.2.2 2013 Accidents by Region

IATA publishes on a yearly basis, jet hull Loss rates per world region, with statistics for 2013 shown in Figure 9.4 and Figure 9.5. The data includes aircraft from IATA member airlines and those from around the world fleet between January and November 2013.

Figure 9.4: Western-built Jet Hull Loss Rate per Region of Operator (as at 30th November 2013)

Source: IATA

Figure 9.5: All accident rate per region of operator (as at 30th November 2013)

Source: IATA

When comparing against 2012, 2013 witnessed deterioration in Western Built hull loss rates from 0.19 to 0.41 on a global basis and 0.00 to 0.32 for IATA member airlines. This was a result in higher Western Built hull loss rates in North America, CIS, MENA and ASPAC. However, there was considerable improvement in the Africa region at 2.39, down from 4.97 in 2012.

Hull loss rates do not portray an accurate reflection of fatalities, with numerous high profile accidents in recent times having very few or no fatalities associated with them. In July 2013, a Boeing 777 sustained serious damage when the aircraft landed short of the runway at San Francisco Airport, USA. Consequently, this caused the aircraft to enter an uncontrolled spin and catch fire however there were only 2 fatalities (out of a total 322 pax/crew) as a result of the crash that died of their injuries in hospital. One more passenger died at the crash scene after surviving the initial impact but was run over by a firefighting and rescue vehicle which was assisting in the accident response.

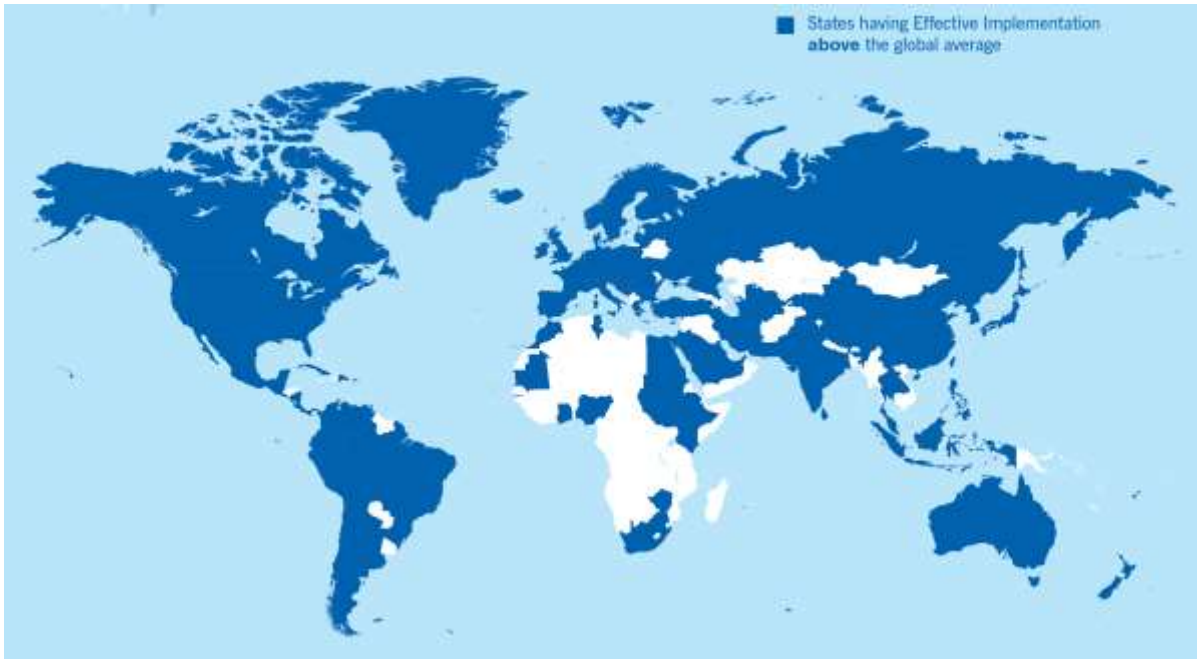
9.2.3 Focus on Africa

Figure 9.6 shows those regions which can be considered ‘developed’ and the western economies including North America, Europe and North Asia display the lowest hull rate loss. Africa continues to be the largest single source of Western Hull rate losses (2.39 per million), though 2013 did see an improvement over 2012 (4.97 per million). ICAO’s Universal Safety Oversight Audit Program (USOAP), which determines a State’s capability for safety oversight over 8 critical elements (Legislation, Organization, Licensing, Operations, Airworthiness, Accident Investigation, Air Navigation Services and Aerodromes) shows numerous states in the African continent that fall below the global average score of 61% in addition to parts of South Asia and the Asian continent (Figure 9.6).

The 2013 Safety Survey by Flightglobal revealed that 51% of the industry participants from the African continent believed that lack of effective oversight could be categorized as a ‘bigger threat to safety’ with 50% believing that shortage of experienced personnel and fatigue/work practice can also be categorized as a ‘bigger threat to safety’. This was higher than any other geographical respondent groups when asked

the same questions[261]. These responses are suggestive of the operating environment realities of the current African aviation industry including pressures derived from the financial health of African airlines and lack of investment in aviation infrastructure within Africa compared to other regions such as North America or Europe.

Figure 9.6: States having effective implementation of safety oversight above the global average of 61%



Source: ICAO

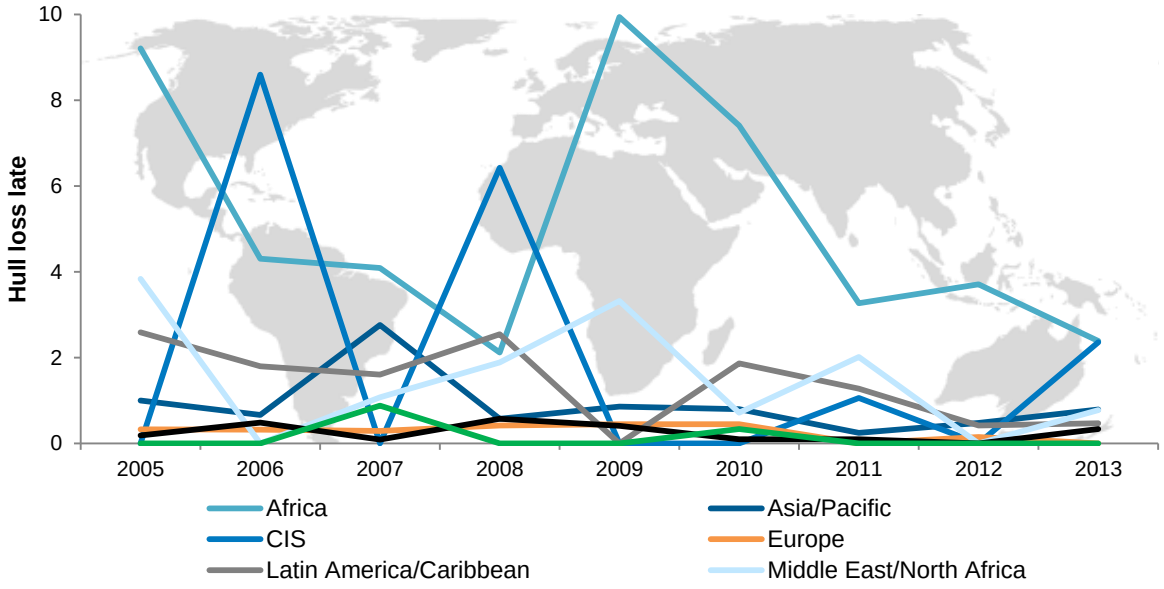
Industry regulatory bodies such as ICAO and IATA have responded to safety concerns in the African continent, introducing the African Strategic Improvement Action Plan in 2012 (as discussed in the 2012 Report).

In September 2013, a large delegation of African Ministers and Aviation Officials met at ICAO in Canada to conduct a high level briefing on the status and way forward for African aviation safety in alignment with the AFI plan. Although the accident rate has been declining (see Figure 9.7 and Figure 9.8 for the long term trend), it was acknowledged at the event that in order for the continuation of the progress, ICAO and Africa need to expand their areas of activity and confirm the engagement of those states and authorities that signed the AFI in 2007[262]. Though progress is being made, it is clear from Figure 9.6 that Africa as a whole will need to continue to enhance and expand safety regulations and oversight to improve its effective implementation score.

[261] Flightglobal Safety Survey 2013

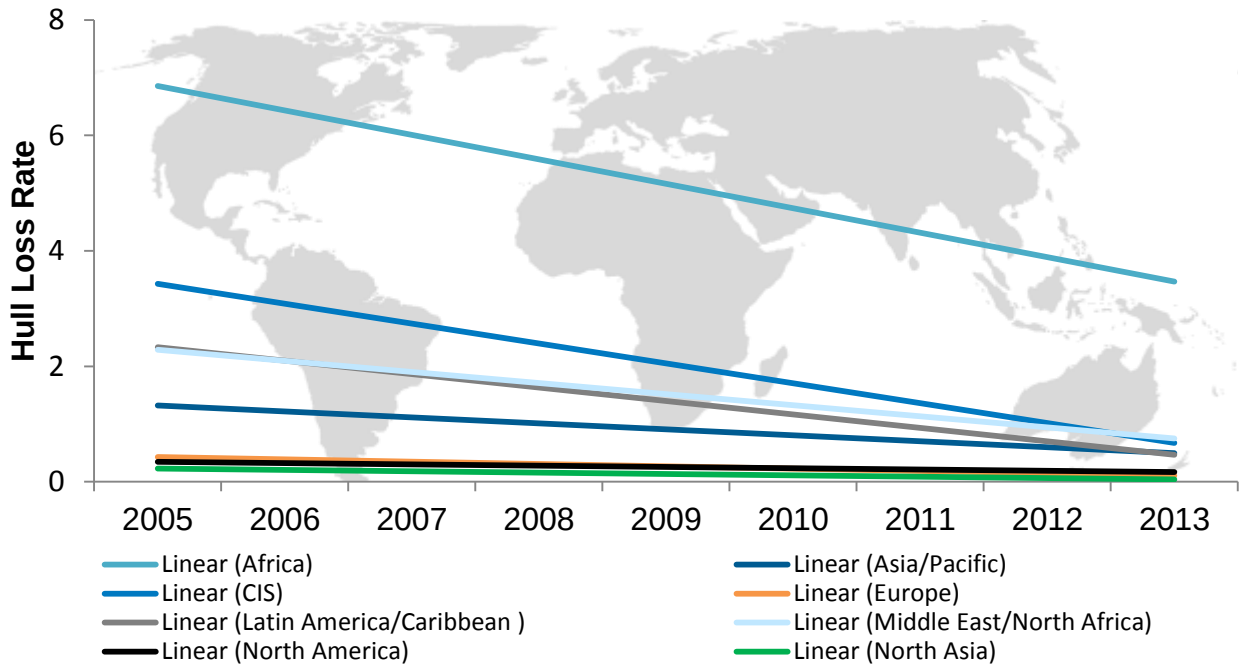
[262] ICAO Press Release: African Ministers And Aviation Officials Meet At ICAO To Discuss Next Steps For Aviation Safety In Africa

Figure 9.7: 2005-2013 western-built hull loss rate per million flights



2005-2012 Full year, 2013: 11 months
Source: Mott MacDonald, IATA

Figure 9.8: 2005-2013 western-built hull loss rate per million flights (linear trend lines)



2005-2012 Full year, 2013: 11 months
Source: Mott MacDonald, IATA

The next steps within the AFI include Air Navigation Services, Aerodromes, Air Routes and Ground Aids and Aircraft Accident and Investigation. In 2013, ICAO reported that some progress has been made in training programs although they acknowledge that more work is required as a result of budget constraints and resources in order to meet the objectives and milestones identified in the AFI Plan[263].

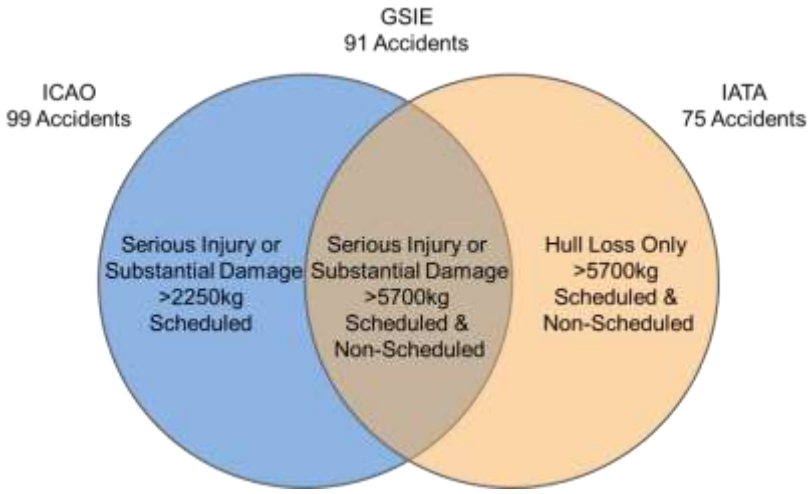
9.2.4 Harmonization of Accident Reporting Data

A milestone was achieved as part of the Memorandum of Understanding (MoU) signed at the 37th ICAO General Assembly in 2010. The MoU called for the establishment of a steering group responsible for the development and effective functioning of a Global Safety Information Exchange (GSIE). In April 2013, for the first time ever, ICAO and IATA published their annual safety reports simultaneously using a harmonized set of safety statistics.

The 2012 ICAO/IATA harmonised rate came in at 2.4 accidents per million flights for all commercial aircraft types above 5,700 kg. The figure is derived from safety-related events involving substantial aircraft damage or serious injury and is down from 3.6 accidents per million flights from when it was first developed and published in 2011. This represents a drop in the accident rate of 33%. The published figures are a result of close cooperation between ICAO and IATA to align accident definitions, criteria and analysis. Figure 9.9 illustrates the combined methodology for the determination of the GSIE data.

Looking forward, this is a substantial development in global accident reporting and will aid the industry by providing a robust credible figure which aviation stakeholders can use to monitor and improve aviation safety.

Figure 9.9: GSIE accident reporting methodology



Source: Mott MacDonald, IATA/ICAO

[263] Comprehensive Regional Implementation Plan For Aviation Safety In Africa (AFI Plan), 14 November 2013; 12th AFI Plan Steering Committee Meeting Montréal

9.2.5 Helicopter Accidents

In 2013, a number of high profile helicopter crashes prompted further attention to the safety of rotary aircraft in civil aviation. Particular focus has been placed on off-shore helicopter operations such as those in Scotland and in the Gulf of Mexico that have large off-shore oil drilling operations.

On August 23rd 2013, a Eurocopter-Super Puma helicopter suffered a power failure crashing into the North Sea killing 4 out of the 18 passengers and crew on-board. This prompted the UK Helicopter Safety Group to advise the grounding of all variants of the helicopter after a series of serious accidents involving this aircraft type in the previous four years. This included a Super Puma that ditched in the sea in 2012 (14 persons were rescued, no fatalities) and a fatal accident in 2009, killing 16 people after the Super-Puma also ditched in the North Sea. Between 1981 and 2010, 8 fatal accidents claimed the lives of 110 passengers and crew in the North Sea[264]. The UK Civil Aviation Authority launched a safety review after this latest incident into North Sea helicopter operations in conjunction with the Norwegian CAA and EASA. This was in addition to a UK parliamentary and the Helicopter Safety Steering Group review that were announced in the months following the August crash.

In the Gulf of Mexico, during the period 2007-2012, 20 accidents were reported of which 4 were fatal causing the deaths of 15 people and injuring 9[265]. The most recent fatal crash killed 1, with 3 survivors in October 2013. The investigation to the causes of the crash is ongoing.

In Australia, the helicopter sector is growing faster than in any other country's aviation industry, according the Australian Civil Aviation Safety Authority, at around 10% per annum. Though the sector is expanding, there was no representative industry body at a time when there is a skills shortage in instruction and maintenance. In 2012, the Australian Helicopter Industry Association (AHIA) was established to be a voice and to work with governments and authorities to ensure safe operations through global best practice. Though the Australian helicopter fleet accounts for 13% of all general aviation, it is involved in 36% of all general aviation accidents in the last ten years.

9.2.6 Boeing 787 Battery Fire Risk Investigation

On January 7th 2013, a fire was discovered on-board a Japan Airlines (JAL) Boeing 787-800 (B787) aircraft that was parked at a gate at Boston Logan International Airport. The fire started in the aircraft's auxiliary power unit (APU), more specifically in the APU battery case[266].

Eight days after this event, on January 16th 2013, an All Nippon Airways (ANA) B787 made an emergency landing at Takamatsu Airport in Japan, after cockpit instrumentation displayed warnings for battery error and smoke detection. This second incident with the same safety risk source instigated both JAL and ANA to ground their fleet of B787 aircraft and carry out investigations with the Federal Aviation Authority (FAA), leading the FAA to issue an airworthiness directive to cease worldwide B787 operations citing battery risk[267].

---

[264] Oil and Gas UK: UK Offshore Commercial Air Transport Helicopter Safety Record (1981-2010)

[265] Helicopter Safety Advisory Conference (April 2nd 2013)

[266] National Transportation Safety Board (March 7th 2013): Interim Factual Report DCA13IA037

[267] FAA Press Release January 16th 2013

The worldwide fleet of B787 aircraft was grounded for approximately 3 months between January and April 2013 whilst authorities and Boeing investigated the cause and mitigation measures. The FAA launched a comprehensive review into the aircraft's critical system and validation process into the batteries and battery system, to ensure that they were compliant with the special condition the agency issues as part of the aircraft's certification.

Commercial Operations resumed in June after the FAA approved Boeing's changes addressing issues at the battery cell level, the battery level and the aircraft level, followed by extensive testing by airlines and aviation authorities. These modifications included battery cell monitoring software, greater spacing between cells, and additional layers of protection against a battery ignited fire[268].

The battery in question is unique to the B787 aircraft consisting of eight lithium-ion cells connected in a series. The Boston incident presented evidence of smoke, hot gases and electrolyte discharges within the battery, with similar displays in the JAL aircraft shortly after[269]. The ANA B787 flight deck displayed warnings to the aforementioned risks including battery system fault and smoke detection before instigating the emergency landing. The type of battery on the B787 aircraft - lithium-ion - has been a source of debate for its use and transportation in aviation for some time with several recorded accidents involving the lithium-ion batteries.

In 2013, the United Arab Emirates (UAE) General Civil Aviation Authority report concluded with 'reasonable certainty' that the cause of a fatal Boeing 747-400F freighter aircraft crash in 2010 was a fire caused by the likely auto-ignition of a batch of lithium batteries carried in main cargo deck[270]. A year after this accident, in 2011, another Boeing 747F freighter crashed into International waters off the South Korean coast as a result of a cargo fire which included the shipment of lithium batteries[271]. A report undertaken by the Federal Aviation Administration (FAA) determined that between March 1991 and January 2013, there had been 140 air incidents involving batteries carried as cargo or baggage[272].

Both ICAO and IATA have updated guidance and regulations for lithium batteries contained within the 2013-2014 Edition of ICAO's Technical Instructions for the Safe Transport of Dangerous Goods by Air and IATA's Dangerous Goods Regulation (DGR). Accompanying these new regulations was a Lithium Battery Guidance Document published by IATA to provide further guidance for the aviation community. In addition the 3rd IATA Lithium Battery workshop was conducted in November 2013 in Limerick, Ireland, to provide a practical explanation on how to ship lithium batteries and promote best practices for regulatory compliance and safety.

9.3 Strategic Safety

This section looks at some strategic safety issues. It is not meant to be a comprehensive list, but instead it presents an update on those issues pertinent to 2013.

[268] Flightglobal, 8th January 2014, 'One year Later, no issues for Boeing 787 battery redesign'

[269] National Transportation Safety Board (March 7th 2013): Interim Factual Report DCA13IA037

[270] General Civil Aviation Authority of the United Arab Emirates-Air Accident Investigation Final Report

[271] Aircraft Accident Investigation Interim Report (17th September 2012) ARAIB/AAR1105

[272] FAA, Batteries and Battery Powered Devices

9.3.1 ICAO GASP and Annex 19 – Safety Management

At the 38th Session of the ICAO Assembly (24 September - 4 October 2013), states endorsed the first edition of the Global Aviation Safety Plan (GASP) and the fourth edition of the Global Air Navigation Plan (GANP).

The Global Plans define the means and targets by which ICAO, states and aviation stakeholders can anticipate and efficiently manage air traffic growth while proactively maintaining or increasing safety.

The GASP is intended to assist ICAO states and regions in their aviation safety policy, planning and implementation activities in several ways:

- Firstly, it sets out the global air navigation safety objectives including specific milestones and priorities to be addressed by State and regional aviation safety planners.
- Secondly, it provides a familiar planning framework to assist states and regions to make improvements in safety through the use of the four Safety Performance Enablers: standardisation, collaboration, resources and safety information exchange.
- Finally, it outlines implementation strategies and best practice guidance material to assist states and regions in their efforts to tailor State and regional solutions to address the global objectives and priorities.

The timetable for the implementation of ICAO's GASP objectives sets out target dates over the next 15 years applicable to the global aviation community as a whole.

On November 14th 2013, ICAO introduced Annex 19 - Safety Management, consolidating Safety Standards and Recommended Practices (SARPS) which were previously included in 6 existing Annexes:

- Annex 1 - Personnel Licensing
- Annex 6 - Operations of Aircraft (Scheduled Int. services)
- Annex 8 - Airworthiness of Aircraft
- Annex 11 - Air Traffic Services
- Annex 13 - Aircraft Accident and Incident Investigation
- Annex 14 - Aerodromes

Annex 19 is structured with 5 chapters covering the following topics:

- Definitions
- Applicability
- State Safety Management Responsibilities
- Safety Management System
- Safety Data Collection, Analysis and Exchange

State Safety Management Responsibilities outlines those responsibilities directly attributed to the state, including requirements implemented by service providers such as approved training organisations,

operators of airplanes and helicopters (authorised for commercial international air transport), air traffic providers and operators of certified aerodromes.

Safety Management Systems are those systems in place by the aforementioned service providers.

New additions to Annex 19 are displayed in Figure 9.10.

Figure 9.10: New additions in Annex 19 - safety management

Source: ICAO

Organizations that are responsible for the type, design and manufacture of aircraft are now included in the service providers listed under Safety Management System (SMS). The four components of SMS elevated to standards include state safety policy and objectives, state safety risk management, state safety assurance and state safety promotion.

The dedicated Safety Management Annex seeks to address and promote the importance of addressing safety risk proactively, to manage and support strategic regulatory infrastructure and developments, re-enforce the role play by the state in managing safety at the state level on coordination with service providers and to stress the concept of overall safety performance in all domains[273].

The new annex marks a significant step forward by consolidating safety SARPS into one standalone document and should be of benefit to aviation stakeholders assisting them in the application of standards and best practices to minimize safety risks and improve safety performance in commercial aviation in the long term.

As this Annex is a consolidation of existing SARPS and updated guidance material it is expected that when additional experience and knowledge is collected, this annex will be updated with feedback from states and organisations such as the EU and EASA[274].

[273] ICAO, 12th September 2013: ICAO European and North Atlantic Office Updates

[274] European Aviation Safety Agency, Safety Management

It is anticipated that this document will be updated on a 3 year cycle, which includes the development of new requirements and further guidance material principally to the State Safety Programs and Safety Management Systems.

9.3.2 Safety vulnerabilities related to automation of the flight deck

Whilst advances in flight deck automation have undoubtedly contributed significantly to improving safety record of the air transportation system, many accidents and incidents, globally and over the last 10 to 15 years, have highlighted vulnerabilities in terms of flight crew management of automation and situation awareness, the most recent of these being the Asiana Boeing 777-200 accident at San Francisco international airport in July where it appears that the flight crew failed to respond in an appropriate and timely manner to correct an automated approach that had become unstable. Another similar incident took place on board a Thai Airways Boeing 777-300 on approach to Melbourne Airport in July 2011 where it was found that the unexpected pitch-up actions by the automated flight control system were not well understood by the pilot in command.

The FAA has now published the Final Report[275] of the Flight Deck Automation Working Group delivered to them on 8 September 2013. It is an evidence-based assessment of the problems which have accompanied the rapid advance in the level of automation. It is also the first comprehensive review of the subject since a 1996 FAA Report on “Interfaces between flight crews and modern flight deck systems”.

The Working Group analysed data from several different data sources including worldwide data from accidents, incidents, normal operations, structured interviews with manufacturers, operators, and training organisations, and reports from related activities. The assessment included an analysis of over 40 flight deck automation-related accidents and incidents that occurred between 1996 and 2007 with the Working Group commenting that since completing their analysis “several accidents have occurred where the investigative reports identified vulnerabilities in the events that are similar to those vulnerabilities identified in this report".

Underlying themes identified by the Working Group include:

- Complexity (in systems and in operations);
- Concerns about degradation of pilot knowledge and skills, and;
- Integration and interdependence of the components of the aviation system.

The Working Group identified several factors that are projected to impact future operations to provide a context in which to consider the findings and recommendations:

- Growth in the number of aircraft operations;
- Continuing changes in the demographics of the aviation workforce;
- Evolution in the knowledge and skills needed by pilot and air traffic personnel;
- Historically low commercial aviation accident rates that make the cost/benefit case very challenging for additional safety and regulatory changes, and;
- Future airspace operations that exploit new technology and operational concepts for navigation, communication, surveillance, and air traffic management.

[275] Operational Use of Flight Path Management Systems, Final Report of the Performance-based operations Aviation Rulemaking Committee/Commercial Aviation Safety Team Flight Deck Automation Working Group, 5 September 2013

A series of 28 interconnected data-driven findings led to the Group agreeing a total of 18 similarly interconnected recommendations (Table 9.3).

Table 9.3: Recommendations relating to operational use of flight path management systems

Ref	Title	Recommendation
1	Manual Flight Operations	Develop and implement standards and guidance for maintaining and improving knowledge and skills for manual flight operations that include the following: Pilots must be provided with opportunities to refine this knowledge and practice the skills; Training and checking should directly address this topic; and Operators' policies for flight path management must support and be consistent with the training and practice in the aircraft type. This should be done in an integrated manner with related recommendations.
2	Autoflight Mode Awareness	For the near term, emphasise and encourage improved training and flight crew procedures to improve autoflight mode awareness as part of an emphasis on flight path management. For the longer term, equipment design should emphasise reducing the number and complexity of autoflight modes from the pilot's perspective and improve the feedback to pilots (e.g. on mode transitions) while ensuring that the design of the mode logic assists with pilots' intuitive interpretation of failures and reversions.
3	Information Automation	Develop or enhance guidance for documentation, training, and procedures for information automation systems (e.g. Electronic Flight Bags (EFBs), moving map displays, performance management calculations, multi-function displays) or functions: Describe what is meant by Information Automation and what systems, equipment are included; Define terms associated with Information Automation; Develop guidelines concerning the content and structure of policy statements in Flight Operations Policy Manuals for Information Automation, and; Develop operational procedures to avoid information-automation-related errors.
4	FMS Documentation, Design, Training, and Procedures for Operational Use	In the near term, develop or enhance guidance for flight crew documentation, training and procedures for FMS use. For the longer term, research should be conducted on new interface designs and technologies that support pilot tasks, strategies and processes, as opposed to machine or technology-driven strategies.
5	Verification and Validation for Equipment Design	Research should be conducted and implemented on processes and methods of verification and validation (includes validation of requirements) during the design of highly integrated systems that specifically address failures and failure effects resulting from the integration.
6	Flight Deck System Design	Flight crew training should be enhanced to include characteristics of the flight deck system design that are needed for operation of the aircraft (such as system relationships and interdependencies during normal and non-normal modes of operation for flight path management for existing aircraft fleets). For new systems, manufacturers should design flight deck systems such that the underlying system should be more understandable from the flight crew's perspective by including human-centred design processes.
7	Guidance for Flight crew Procedures for Malfunctions	Develop guidance for flight crew strategies and procedures to address malfunctions for which there is no specific procedure.
8	Design of Flight crew Procedures	For the near term, update guidance (e.g., Advisory Circular (AC) 120-71A) and develop recommended practices for design of SOPs based on manufacturer procedures, continuous feedback from operational experience, and lessons learned. This guidance should be updated to reflect operational experience and research findings on a recurring basis.

Ref	Title	Recommendation
		For the longer term, conduct research to understand and address when and why SOPs are not followed. The activities should place particular emphasis on monitoring, cross verification, and appropriate allocation of tasks between pilot flying and pilot monitoring.
9	Operational Policy for Flight Path Management	Operators should have a clearly stated flight path management policy as follows: The policy should highlight and stress that the responsibility for flight path management remains with the pilots at all times. Focus the policy on flight path management, rather than automated systems; Identify appropriate opportunities for manual flight operations; Recognise the importance of automated systems as a tool (among other tools) to support the flight path management task, and provide operational policy for the use of automated systems; Distinguish between guidance and control; Encourage flight crews to tell Air Traffic “unable” when appropriate; Adapt to the operator’s needs and operations; Develop consistent terminology for automated systems, guidance, control, and other terms that form the foundation of the policy, and; Develop guidance for development of policies for managing information automation.
10	Pilot-Air Traffic Communication and Coordination	Discourage the use of regional or country-specific terminology in favour of international harmonisation. Implement harmonised phraseology for amendments to clearances and for declaring onto procedures with vertical profiles and speed restrictions. Implement education and familiarisation outreach for air traffic personnel to better understand flight deck systems and operational issues associated with amended clearances and other air traffic communications. In operations, minimise the threats associated with runway assignment changes through a combination of better planning and understanding of the risks involved.
11	Airspace Procedure Design	Continue the transition to PBN operations and drawdown of those conventional procedures with limited utility. As part of that transition, address procedure design complexity (from the perspective of operational use) and mixed equipage issues. Standardise PBN procedure design and implementation processes with inclusion of recommended practices and lessons learned. This includes arrivals, departures, and approaches.
12	Flight Deck Design Process and Resources	Ensure that appropriate human factors expertise is integrated into the flight deck design process in partnership with other disciplines with the goal of contributing to a human-centred design. To assist in this process, an accessible repository of references should be developed that identifies the core documents relevant to “recommended practices” for human-centred flight deck and equipment design. Early in the design process, designers should document their assumptions on how the equipment should be used in operation.
13	Pilot Training and Qualification	Revise initial and recurrent pilot training, qualification requirements (as necessary) and revise guidance for the development and maintenance of improved knowledge and skills for successful flight path management. As part of the implementation of this recommendation, improve the oversight of air carriers and Part 142 Training Centres.
14	Instructor/Evaluator Training and Qualification	Review and revise, as necessary, guidance and oversight for initial and recurrent training and qualification for instructors/evaluators. This review should focus on the development and maintenance of skills and knowledge to enable instructors and evaluators to successfully teach and evaluate airplane flight path management, including use of automated systems.
15	Regulatory Process and Guidance for Aircraft Certification and Operational Approvals	Improve the regulatory processes and guidance for aircraft certification and operational approvals, especially for new technologies and operations, to improve consideration of human performance and operational consequences in the following areas: Changes to existing flight deck design through Supplemental Type

Ref	Title	Recommendation
		Certificates (STCs), Technical Standard Orders (TSOs), or field approvals, and; Introduction of new operations or changes to operations, to include implications for training, flight crew procedures, and operational risk management.
16	Flight Deck Equipment Standardisation	Develop standards to encourage consistency for flight crew interfaces for new technologies and operations as they are introduced into the airspace system. Standards should be developed which establish consistency of system functionality (from an airspace operations perspective) for those operations deemed necessary for current and future airspace operations.
17	Monitor Implementation of New Operations and New Technologies	Encourage the identification, gathering, and use of appropriate data to monitor implementation of new operations, technologies, procedures, etc. based on the specified objectives for safety and effectiveness. Particular attention should be paid to human performance aspects, both positive and negative.
18	Methods and Recommended Practices for Data Collection, Analysis and Event Investigation That Address Human Performance and Underlying Factors	Develop methods and recommended practices for improved data collection, operational data analysis and accident and incident investigations. The methods and recommended practices should address the following: When reviewing and analysing operational, accident and incident data, or any other narrative-intensive dataset, ensure that the team has adequate expertise in the appropriate domains to understand the reports and apply appropriate judgement and ensure that the time allotted for the activity is adequate; Explicitly address underlying factors in the investigation, including factors such as organisational culture, regulatory policies, and others; Provide guidance on strengths and limitations of different data sources and different methodologies and taxonomies; Encourage the use of multiple, dissimilar data sources to provide better coverage of events; Encourage the wide sharing of safety related information and analysis results, especially lessons learned and risk mitigations.

Source: FAA

9.3.3 Upset Prevention and Recovery Training (UPRT)

Regulators on both sides of the Atlantic have issued or are preparing to issue rules requiring airlines to provide upset prevention and recovery training (UPRT) for pilots, according to US Federal Aviation Administration and European Aviation Safety Agency speakers at the Royal Aeronautical Society's UPRT conference in London.

The FAA issued a final rule in November[276] requiring airlines to develop an approved UPRT programme that will be operational within five years. Subsequently, in February 2015 the FAA will issue a notice of proposed rulemaking requiring simulator manufacturers to extend the performance of their machines to represent – more accurately than they currently do – aircraft performance and behaviour close to the edges of the flight envelope. If the Notice of Proposed Rule Making (NPRM) is approved it will become a rule the following year.

[276] Qualification, Service, and Use of Crewmembers and Aircraft Dispatchers, U.S. Department of Transportation, FAA, National Policy Notice N 8900.241, 4 Nov 2013

One of the problems in reaching decisions on how simulation can be used for safe upset recovery training has been the fact that if carried out badly, it can have a negative effect on pilot ability to deal with upsets correctly.

A dramatic example was the fatal crash of an American Airlines Airbus A300-600 near New York in October 2001, when UPR training at the airline caused a pilot to overreact to an encounter with wake turbulence. The aircraft's fin was overstressed and subsequently detached due to excessive rudder use.

In 2014, EASA anticipates it will issue a Notice of Proposed Amendment (NPA) defining proposed loss of control prevention and recovery training requirements for airlines.

Both these actions have effectively been enabled by international consensus awaited since the need for UPRT was recognised in 1998, and as a result of the increase in fatal loss of control accidents involving airliners. ICAO is close to issuing its Manual on Aeroplane Upset Prevention and Recovery Training (Doc 10011), and in 2014 it will publish standards for UPRT in Annex 1 to Procedures for Air Navigation Services – Training (PANS TRG -Doc 9868), which provides the national regulators with agreed standards on which to base their regulations.

9.3.4 Authorisation of Third Country Operators (TCO)

In July 2013 the European Commission adopted a proposal for the authorisation of Third Country Operators (TCO) engaged in commercial air transport (CAT) operations in Europe[277]. The proposed rules (Part-TCO) are subject to the legislative procedure by the European Parliament and Council, followed by publication in the Official Journal of the European Union.

Upon entry-into-force of Part-TCO, Third Country Operators engaged in commercial air transport (CAT) operations must demonstrate to EASA compliance with international (ICAO) standards. The proposed rules intend to harmonise and streamline the authorisation process for TCOs by proposing a single, proportionate and risk-based safety assessment performed by EASA. The TCO Authorisation issued by EASA will become a pre-requisite to exercise operational permits (commercial traffic rights) which will continue to be granted by individual EASA Member States.

9.3.5 Update of Rules on the use of Portable Electronic Devices

In December 2013, EASA updated its guidance[278] on the use of portable electronic devices on board (PED), including smartphones, tablets and e-readers. It allows, for the first time, the use of these devices in "Flight Mode" (non-transmitting mode) throughout the journey (including taxiing, take-off and landing). In the USA, following a review of PED policy in 2013 by the Aviation Rulemaking Committee (ARC), the FAA guidance also changed in October[279] to allow the "gate to gate" use of PED in Flight Mode within US domestic airspace. JetBlue and Delta became the first two airlines to implement this new policy within a few days of its issue.

[277] Draft Commission Implementing Regulation (EU) No …/.. of XXX laying down technical requirements and administrative procedures related to air operations of third country operators pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council,

[278] Regulation (EU) No. 965/2012 CAT.GEN.MPA.140 "Portable electronic devices" and related Acceptable Means of Compliance (AMC) and Guidance Material (GM) as amended by ED Decision 2013/028/R.

[279] Expanded Use of Passenger Portable Electronic Devices (PED), U.S. Department of Transportation, FAA, National Policy Notice N 8900.240, 31 Oct 2013

EASA are now reviewing the safe use of blue tooth, Wi-Fi, and mobile phones (in transmitting mode) with new guidance to be published in 2014. This is currently only possible in specially equipped aircraft, where passengers do not connect to the ground network but to a safety certified on-board system. There are only a few aircraft equipped at the moment but this is expected to expand in the coming years.

As well as the potential for electronic interference, one of the additional areas of concern is the possible increased cyber threat facing latest generation aircraft, such as the Boeing 787 and Airbus A350 that are increasingly connected to data networks and the internet.

9.3.6 Remotely Piloted Aircraft Systems (RPAS)

Over the last few years, there has been a growing recognition of the role that Remotely Piloted Aircraft Systems (RPAS) and Unmanned Aircraft Systems (UAS) can play in the commercial aviation sector.

RPAS have long been used in Military Aviation but the benefits of these systems are now being realised in areas such as agriculture, logistics, infrastructure monitoring and photography[280]. Governments across the globe have subsequently implemented policies which promote and enable these RPAS activities increasing the number of RPAS operators. In Japan, between 1993 and 2005 the number of operators rose from quasi none to several thousand as a result of an enabling policy in the use of RPAS for agriculture[281].

This emerging RPAS market has promoted aviation authorities across the world to address the issue of how RPAS can be safely integrated into the aviation system.

In June, 2013, the European RPAS Steering Group, a stakeholder group of organisations and experts who have an interest in the integration of RPAS, published its 'Roadmap for the integration of civil Remotely-Piloted Aircraft Systems into the European Aviation System to the European Commission. With the goal of introducing a progressive integration of RPAS into European Airspace from 2016 onwards, the strategy seeks to implement an enabling regulatory policy that initially focuses on mature technology before more complex operations are permitted through greater testing, monitoring and the issuing of licences[282].

On November 7th 2013, the FAA published its first 'Integration of Civil Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS) Roadmap'. This roadmap sets out the stages involved in facilitating UAS into the national airspace with one of its prime objectives to not decrease safety or increase risk to airspace users and those property/persons on the ground[283]. The FAA takes a similar methodology as the EU with a three step timeframe perspective consisting of accommodation, integration and evolution as UAS operations develop[284].

In December 2013, the New Zealand Civil Aviation Authority (CAA) provided a draft policy paper addressing their approach to the regulation of RPAS which prompted many questions from the RPAS community regarding the operational risks of RPAS. The CAA policy development process continues into 2014.

[280] Remotely Piloted Aircraft Systems, Civil Aviation Authority of New Zealand, http://www.caa.govt.nz/rpas/

[281] Opening the Aviation Market to the civil use of remotely piloted aircraft systems in a safe and sustainable manner, European Commission, 08th April 2014

[282] Opening the Aviation Market to the civil use of remotely piloted aircraft systems in a safe and sustainable manner, European Commission, 08th April 2014

[283] Integration of Civil Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS) Roadmap, FAA, 7th November 2013

[284] Integration of Civil Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS) Roadmap, FAA, 7th November 2013

At a global industry level, ICAO has been working with states and industry stakeholders to publish its first guidance material for the RPAS Operations expected to be published in 2014 which will supersede previous guidance contained within Circular 328 - Unmanned Aircraft Systems (UAS) published in 2011. The standards will include certificate of airworthiness for a remotely piloted aircraft, certified components, certified RPAS operators and licences for remote pilots[285].

One of the biggest challenges that face the future safety connotations of RPAS is the scope and extent to which they will be operating in the future. It is expected that RPAS operations will grow through enabling policies and developments in technology. Currently, the research and development is curtailed as a result of current legislation and a non-harmonised framework approach to RPAS in commercial aviation.

9.3.7 Continuing Airworthiness of Ageing Aircraft

Following the fatal crash of the Tatarstan Air Boeing 737-500 at Kazan Airport in November 2013, Russian legislators are contemplating a ban on domestic airlines from operating foreign aircraft that are more than 15 years old. The aircraft that crashed was 23 years old.

However, Russia's Interstate Aviation Committee, which is inquiring into the accident, had previously dismissed the relevance of the aircraft's age: "The main aspect for safety is the airworthiness of the aircraft and not its age," it says. "There is no direct relationship between accidents and aircraft age."

The ICAO continuing airworthiness is based on ICAO Annex 6, Operation of Aircraft, and ICAO Annex 8, Airworthiness of Aircraft. The system is designed to be used by all organisations associated with the design, manufacture, certification, operation, and maintenance of an aircraft. While the system exists for all aircraft types and operations, it is generally used for transport category aircraft.

The continuing airworthiness system is of particular relevance to ageing aircraft. Operators provide the type certificate holder with in-service information related to fatigue, corrosion, and other ageing issues. The type certificate holder can then determine what repairs, replacements, or modified maintenance schedules, are required to ensure the continued safe operation of the fleet.

In April 2013, EASA issued a NPA[286] proposing changes to the Implementing Rules, Certification Standards, Acceptable Means of Compliance and Guidance Material in order to ensure that the safety risks associated with 'ageing aircraft' issues continue to be mitigated. The text of the NPA was developed by the Agency based on the contribution of the MDM.028 working group and on the earlier efforts of the Airworthiness Assurance Working Group (AAWG) and the European Ageing Aircraft Working Group (EAAWG).

The initial rulemaking task on the 'Development of an ageing aircraft structure plan' was divided into three different tasks. This NPA addresses only large aeroplanes and subsequent tasks will be required to establish if there is a need to develop continuing structural integrity programmes for other classes of aircraft as well as addressing concerns over changing the operational use of aircraft compared to the original design assumptions.

[285] Gerry Corbett, ICAS UAS Study Group, International Regulatory Framework for Remotely Piloted Aircraft Systems ICAO (PowerPoint Slides),RAeS Society, London 20th September 2012

[286] Notice of Proposed Amendment 2013-07, Ageing aircraft structures, EASA, RMT.0225 (MDM.028(a)), 23 Apr 2013

9.3.8 EASA 2014-2017 Programme

In August 2013, EASA published its 4-year Rulemaking Programme for the period 2014-2017. Some of the highlights and priorities of the Programme are:

- Enhancements to the safety of General Aviation, while reducing the certification costs, including simplification of maintenance rules and harmonisation on Instructions for Continuing Airworthiness;
- The review and updating of the initial new rules on Aircrew and Air Operations including projects on enhancing pilot training and qualifications, as well as runway safety, as identified in the EASA, and;
- Rulemaking projects necessary to support the implementation of the European ATM Regulatory Roadmap and the regulatory needs stemming from SESAR deployment.

9.3.9 EU-External Relations

Across the globe, countries continue to work closely together to improve worldwide aviation safety. One of the major areas of cooperation is the sharing of best practice and the sharing of knowledge amongst countries which is becoming particularly prevalent in the manufacturing of commercial aircraft. In the last few decades, the production of large commercial aircraft has been principally a North American and European activity. However countries such as Brazil, China, Japan and Russia are rapidly expanding this industry sector including the supply of manufacturing of aircraft components in a globalised aircraft manufacturing supply chain.

Brazil

The agreement between the European Union and the Government of the Federative Republic of Brazil ('The Parties') on civil aviation safety came into force on 27 August 2013[287]. One of the objectives contained within the agreement was:

'To allow the Parties to adapt to the emerging trend toward multinational design, manufacture, maintenance, and interchange of Civil Aeronautical Products, involving the common interests of the Parties concerning civil aviation safety and environmental quality'.

The two parties held their first certification meeting on 10 October and the agreement has been welcomed by the General Aviation Manufacturers Association (GAMA). GAMA suggests that this will simplify equipment certification processes, reducing duplication of effort and expense, while simultaneously strengthening international aviation safety co-operation.

Brazil's Embraer continues to be one of the world's largest commercial and business aircraft manufactures and though it has previously been focused on regional and executive aircraft, the company is now expanding its portfolio into larger commercial jet manufacturing. Growing demand in South America and the BRIC countries is expected to drive demand for its products in the future.

China

Europe and China have cooperated in aviation safety for many years with numerous initiatives set up for greater collaboration between the EU and China.

[287] Official Journal of the European Union, L 273/3

The European China Civil Aviation Project (EUCCAP), set up in 2010, has been developing and implementing "train-the-trainers" programmes and workshops for the Chinese civil aviation administration, agencies and wider stakeholders on the best international practices, including EU practices, in relation to all aspects of safety and security. Areas covered include certification, air traffic management (ATM), airport and environmental issues, as well as other relevant regulatory issues increasing air traffic safety, security and efficiency[288].

On December 3rd - 5th 2013, China and the Single European Sky ATM Research team (SESAR) hosted a seminar to share knowledge and experience regarding Europe's ATM R&D trends. The Civil Aviation Administration of China (CAAC) expressed their aim to align China's growing ATM movements to ICAO's Global Air Navigation Plan and working with SESAR would help them achieve this goal for safe and efficient Air traffic management[289].

Aircraft manufacturing in China is now established with the European Aircraft manufacturer Airbus building its A320 short haul aircraft in China since 2009, in addition to setting up specialist training, engineering and manufacturing centres in-country[290].

In September 2013, Airbus and the CACC signed a new Memorandum of Association (MoA) which states that both member partners will continue to work together on safety challenges, especially those that have arisen from the rapid development of the civil aviation industry in China[291].

China's presence as an independent aircraft manufacturing country has been established with the launch of two internally designed and built aircraft through the state owned firm - Commercial Aircraft Corporation of China, Ltd (COMAC). As of 2013, the ARJ21 regional jet was at the flight test and certification stage, the C919 single aisle jet was at engineering development stages and Comac has started research into a wide-body aircraft[292].

Japan

Manufacturing cooperation between the EU and Japan has principally focused on aeronautical engines and the helicopter industry, with a working agreement between EASA and Japanese Civil Aviation Bureau (JCAB) that aims to facilitate and accomplish the JCAB certificates issued on products and parts[293].

In April 2013, the EU-Japan Business Round Table Working Party, consisting of European and Japanese companies, issued a recommendation paper to the Leaders of the EU and Japan to highlight that the two partners could work together more closely with regards to aircraft certification processes. It calls for a Bilateral Agreement to be in place which would supersede the working arrangement and improve working collaboration[294].

---

[288] EUCCAP, www.euccap.org, 28 Apr 2014

[289] China and SESAR Ju discuss civil aviation research and development, http://www.sesarju.eu/newsroom/all-news/china-and-sesar-ju-discuss-civil-aviation-research-and-development, 20 Jan 2014

[290] Airbus in China, http://www.airbus.com/company/worldwide-presence/airbus-in-china/, 30 April 2014

[291] Airbus, 'Airbus and China extend cooperation on safety into the future', http://www.airbus.com/presscentre/pressreleases/press-release-detail/detail/airbus-and-china-extend-cooperation-on-safety-into-the-future/, 6 September 2013

[292] Flightglobal, C919 moves into 'critical stage' of engineering development: Comac, 26 Sep 2013, ARJ21 at 'critical stage' in flight test programme, 29 Sep 2014, Comac starts research on widebody project, 27 Sep 2013

[293] Working Arrangement - Japan,EASA, http://easa.europa.eu/countries/countries-whom-easa-has-working-arrangement/japan

[294] Recommendations of the EU-Japan Business Round Table to Leaders of the European Union and Japan, Working Party C Paris

Russia

In 2011, Russia's civil aviation manufacturing industry reached a milestone with the first delivery of its Sukhoi Superjet 100 regional jet. By the end of 2013, the aircraft had received 179 orders from across the globe[295].

The Superjet program was developed with close cooperation from the US and Europe with the strategic partnership between Sukhoi and Finmeccanica Group one of the most pertinent aviation partnerships between Russia and Europe to date[296]. Regarded as a major step forward, in 2012, EASA issued a type certificate for the aircraft recognising that the aircraft complies with its airworthiness and environmental requirements.

In 2013, the Interstate Aviation Committee (IAC) which represents the Commonwealth of Independent States (CIS) issued the first export certificate for Europe for the aircraft.

9.3.10 Developments in Flight and Duty Time Limitations (FTL) and Fatigue Risk Management in 2013

Europe

Within Europe, the lengthy debate over the development of EU-wide harmonised rules on Flight Time Limitations (FTL) for commercial airline operations came to an end in October 2013, when the European Parliament (EP) endorsed the Commission's proposals. The new FTL rules will have to be implemented across all EU Member States, including Norway, Iceland and Switzerland with a 2-year transition period starting after the publication of the regulation[297], which came into force on 18 February 2014.

The new rules aim to improve existing flight time limitation rules inter alia by limiting night time flights to 11 hours, adding limits for flight time in 12 consecutive months and adding rest periods to counter cumulative fatigue after extended flights and in the event of disruptive schedules. Total time should not exceed 16 hours for combined airport standby and following flight duty.

The new regulation also includes requirements for Fatigue Risk Management to be established, implemented and maintained. Requirements for FRM include the need to be based on scientific principles and knowledge and include hazard identification, risk assessment, risk mitigation and monitoring in order to manage, on a continuous basis, the risks arising from crew member fatigue.

EASA intends to present proposals for business aircraft FTLs in 2014.

USA

On March 5, 2013, the Federal Aviation Administration published its response to a set of clarifying questions associated with the agency's new flight, duty, and rest final rule 78 Fed. Reg. 14166 (March 5,

---

29th and 30th

[295] Superjet International, http://www.superjetinternational.com/products/sukhoi-superjet100/ 30 April 2014

[296] Sukhoi Aircraft, http://www.sukhoi.org/eng/planes/projects/ssj100/, 30 April 2014

[297] Commission Regulation (EU) No. 83/2014, of 29 January 2014 amending Regulation (EU) No 965/2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council

2013). The notice addresses several issues of importance to air carriers, as well as calculation of reserve periods, the circumstances under which a pilot or navigator ("flight crew member") may exceed the limitations on flight time and flight duty periods, and the impact of early morning report times on flight duty periods scheduled for more than three consecutive days.

The clarifications apply to the new flight, duty, and rest rules that were published by the FAA on January 4, 2012, and take effect January 4, 2014 incorporated in 77 Fed. Reg. 330 (January 4, 2012). Those rules impose new limitations on the number of hours flight crew members engaged in passenger operations under 14 CFR Part 121 can work, as well as new requirements on the amount of rest they must receive prior to beginning a new flight duty period, significantly changing how the FAA regulates the working conditions of pilots in the areas of duty and rest. The FAA hoped that the agency could issue a comprehensive set of clarifications well before the rule took effect, providing both certainty and an opportunity to make any needed adjustments to the carriers' implementation plans. The responses issued on March 5, 2013, are the result of that effort.

In June 2013, the FAA issued an advisory circular on Fatigue Risk Management Systems (FRMS) for Aviation Safety[298]. The advisory circular provides information on the components of an FRMS as applied to aviation, and on how to implement an FRMS within an aviation operation. It defines the common elements as well as the specifics that will need to be tailored to a certificate holder's particular conditions. The circular provides the certificate holder with the necessary detailed guidance to prepare for the FRMS approval process, develop the required documentation, develop and apply fatigue risk management and safety assurance processes, collect and analyse data, develop flight crew FRMS operations procedures and a step-by-step process required for FAA evaluation and validation of the proposed FRMS application.

Australia

New rules are now in place for the management of flight crew fatigue in Australian aviation. Changes to the Civil Aviation Orders relating to fatigue management took effect from 30 April 2013[299]. Air operators have three years to transition to the new requirements, which provide a three tiered approach to the management of fatigue. Operators can choose which method they will use to comply with the new rules, allowing greater flexibility while at the same time requiring additional levels of risk management where appropriate. The three tiers are basic prescriptive limitations, operational flexibility within prescriptive limitations and fatigue management systems. Operators can choose to develop sophisticated fatigue management systems where they wish to commence or continue operations that cannot fit under the prescribed limitations. The new rules do not include flight or duty time limitations for private pilots. However, it is made clear all pilots must not operate an aircraft while fatigued or when they are likely to become fatigued.

The new fatigue rules were developed in conjunction with representatives from the aviation industry, including people from air operators and pilot groups. The Civil Aviation Safety Authority (CASA) of Australia issued a notice of proposed rulemaking in May 2012 seeking comment on the proposed changes and as a result made a number of amendments to the proposals. The requirements are consistent with ICAO standards and recommended practices[300] and take into account the latest science on fatigue and

[298] Fatigue Risk Management Systems (FRMS) for Aviation Safety, FAA Advisory Circular, AC No: 120-103A, 5 June 2013

[299] Civil Aviation Order 48.1 Instrument 2013

[300] ICAO Annex 6 Chapter 4, Section 4.10 Fatigue Management and Appendix 8 Fatigue Risk Management System Requirements; Fatigue Risk Management Systems, Manual for Regulators, ICAO Doc 9966, First Edition 2012; Implementation Guide for Operators, ICAO, IATA and IFALPA, 1st Edition, July 2011

sleep. The aim is to strengthen the management of pilot fatigue across all sectors of the aviation industry to further improve safety. A key element of the new regime is an emphasis on fatigue management being a shared responsibility of both air operators and pilots.

Canada

Canada's flight and duty time regulations[301] have been in place since 2006. In November 2012, a report by the CARAC Flight Crew Fatigue Management Working Group[302] to update flight- and duty-time regulations and rest requirements was submitted for review by the Civil Aviation Regulatory Committee, but the process for amending the regulations appears to have stalled. The Airline Pilots Association (ALPA) is urging Transport Canada to follow the United States' lead and approve new science-based flight- and duty-time regulations for Canadian flight crews. This update would bring Canadian regulations in line with ICAO's standards and recommended practices on fatigue management.

9.4 Aviation Security

9.4.1 EU-ICAO Memorandum of Cooperation

In 2013, the EU and ICAO met at the UN Aviation Body in Montreal, acting to adopt a new aviation security annex to the Memorandum of Cooperation which has been in place since 2011[303].The new security annex to intended to formalise the cooperation with specific focus on the exchange of information and expertise and the financing of specific security initiatives[304].

This agreement preceded the annual ICAO General Assembly- 38th Session at Montreal, 24th-04th September/October 2013 which the EU attended. One of the key items on the agenda was aviation security with the key actions concerning international cooperation below:

- Promote to increased use of cooperation mechanisms amongst member states for information exchange on security measures
- Share best practice and information on areas such as screening, inspection, detection, documentation and risk analysis[305].

9.4.2 IATA and ACI - Smart Security Initiative

In December 2013, IATA and Airports Council International (ACI) signed a Memorandum of Understanding (MoU) to jointly develop 'Smart Security' known as 'SmartS'[306]. The initiative replaces the 'Checkpoint of the Future' program which provided a conceptual approach to how the aviation community can adopt a risk

[301] Canadian Aviation Regulations Part VII - Commercial Air Services ; Division III – Flight Time and Flight Duty Time Limitations and Rest Periods, amended 1 Dec 2006

[302] Report of the Canadian Aviation Regulation Advisory Council (CARAC) Flight Crew Fatigue Management Working Group, June 2012

[303] ICAO news Release, EU/ICAO Collaboration expands to include new security provisions, 18 March 2013

[304] ICAO news Release, EU/ICAO Collaboration expands to include new security provisions, 18 March 2013

[305] ICAO Resolutions adopted by the Assembly 38th Session, Montreal 24 September-4 October 2013

[306] ACI Media Release, 'ACI and IATA Collaborate to Deliver Smart Security', 12 Dec 2013

based approach to aviation security compared to the incumbent 'one-size-fits-all' policy that can be inefficient, complex and include invasive security processes. The Smart Security initiative is focused around passenger security screening.

The name change also reflects the introduction of new pilot testing of security technology in the fields of screening, security integration and new procedures. Multiple technological innovations were tested under the Checkpoint of the Future program however these were tested individually. SmartS seeks to integrate these technologies and thus maximise the benefits of synergy for a holistic approach to passenger security.

SmartS focuses around 3 goals:

- Strengthened security;
- Increased operational efficiency;
- And improved passenger experience.

These goals seeks to improve the passenger experience, maximise operational efficiencies, as well as focus the deployment of security resources based on risk and improvements due to the ability to counter threats through technological innovations and integration.

Aviation stakeholders including governments, airlines, airports, law enforcement entities and technology providers are all involved in the development of SmartS.

9.4.3 Liquids, Aerosols and Gels (LAGs)

Since 2006, there has be a restriction on the liquids, aerosols and gels that passengers are allowed to carry in hand baggage as an initial temporary response to a plot to explode airlines over the Atlantic ocean using liquid explosives[307]. These restrictions were outlined in Commission Regulation (EU) No 1546/2006 amending Regulation (EC) No 622/2003 laying down measures for the implementation of the common basic standards on aviation security.

However it was subsequently recognised with the continuing terrorism threat to civil aviation, with the volumetric restrictions in place will remain in place until operationally feasible technological solutions are deployed that it is widely accepted they continue to be an inconvenience to travellers, airlines and airports.

In 2013, the EU updated these restrictions to the carriage of Liquids, Aerosols and Gels (LAG's) amending EU Regulation No 185/2010[308].The amendments introduced a first phase, or step, towards the complete lifting of the restrictions which into effect on the 31st January 2014. These replaced an earlier timetable for the lifting of restrictions.

These amendments include:

- LEDS (Liquid Explosive Device Systems) equipment are capable of detecting and indicating by means of an alarm specified and higher individual quantities of threat materials in LAG's (Standard 1)
- LEDS equipment meeting standard 1 may be used until 20 January 2016 at the latest

[307] Commission Regulation (EU) No 1546/2006 of 4 October 2006 amending Regulation (EC) No 622/2003 laying down measures for the implementation of the common basic standards on aviation security

[308] Commission Implementing Regulation (EU) No 246/2013 of 19 March 2913 amending Regulation (EU) No 185/2010 as regards the screening of liquids, aerosols and gels at EU airports

The first phase will require all airports to screen with special liquid explosive detection equipment at least LAG's in security tamper evident bags (STEB's) purchased at airports and any liquid medicine or special dietary needs such as baby food[309].

The measure was introduced a result of stakeholder discussions with the operational viability, maturity of technology available on the market and scale of change required[310].

The easing of these restrictions has been in coordination with USA, Australia and Canada and implementation reflects the associated recommendation from the ICAO High-level Conference on Aviation Security (HLCAS) which took place in September 2012[311]. The HLCAS recommended that Member States, in cooperation with ICAO and industry stakeholders, implement LAGs screening technology where possible and continue their collaborative efforts to develop, implement and maintain mutually recognised minimum requirements for LAGs screening in order to treat flights arriving from Member States applying LAGs screening in the same way as flights from states where LAGs restrictions are applied.

9.4.4 Cyber Security

The potential threat of cyber security in aviation has long been regarded as a minor issue. However, with the growing dependence and reliance on information technology in the industry the threat and the potential risk it poses is becoming ever larger.

In August 2013, the American Institute of Aeronautics and Astronomy published a decision paper outlining a framework for aviation cyber security. The report covered numerous issues including:

- Establishing a common cyber standard for aviation;
- Establishing a cyber-security culture;
- Understanding the threat of cyber security;
- Understanding the risk of cyber security.

The report concluded that while aviation has demonstrated an unprecedented level of safety and reliability, the implications of increased connectivity and dependency on ICT need to be understood in light of evolving cyber threats. The AIAA recommended that:

- A common cyber security vision should be implemented which include strategy, goals and a framework to address the evolving threats;
- An increase in cooperation and focus within the aviation community with active participation from major players;
- To leverage, extend and apply existing industry best practices;
- Involve the appropriate government agencies;
- Commence construction of a roadmap by identifying near, mid and long terms actions;

[309] EU Mobility and Transport, Air- Liquids, aerosols and gels, http://ec.europa.eu/transport/modes/air/security/aviation-security-policy/lags_en.htm, 30 April 2014

[310] Airport Business.com, New LAGs Legislation enters into force. April 2013

[311] ICAO, Assembly 28th Session, Agenda Item 13-Aviation Security Policy- Implementation of liquids, aerosols and gels screening, A38-WP/136 EX/52 19/8/13

- Establish and government and industry framework to coordinate national aviation cyber security strategies, policies and plans.

Though civil aviation has not been victim to a cyber-security attack there have been incidents with technology that highlights the underlying potential for such an attack. In 2008, a Boeing analyst identified a weakness on the on-board computer system of the B787 aircraft that could allow passengers to take control of the aircraft through the aircraft's Wi-Fi-capability[312].

During 2013, the pace of cyber security related events and research continued.

In November 2013, a workshop on National Security Operation Centres (SOC) and network Security was held at EUROCONTROL.

The objectives of the workshop were:

- To share experiences on implementation and operation of national security operation centres;
- Identify possible way ahead for security governance and trust for the ATM network.

Attendees included the EU, EASA, European Network and Information Security Agency, (ENISA), military organisations and aviation stakeholders[313]. A key issue raised was the was the implementation for a strategy for a secure ATM network that involves collaboration and harmonisation amongst the agencies which echoes the finding of the AIAA report recommendations for greater collaboration and development of a strategy for aviation cyber security.

Also in November 2013, the Air Traffic Control Association held their 2nd Aviation Cyber Security Conference bringing together numerous industry stakeholders including government and industry organisations to present their findings and approach to cyber security with a particular emphasis on air space security[314]. Subsequent to this event, it has been decided that a dedicated meeting to cyber security will be held in June 2014 which highlights the growing attention being paid to this matter[315].

9.4.5 Perimeter Security

Airport Perimeter Security remains a challenge for airport operators around the world and continues to be an important component of general aviation security.

One of the biggest difficulties remains providing around the clock safeguarding of an aerodrome even though its perimeter can be many miles long.

During 2013 there were a number of high profile airport perimeter breaches across the world.

In February 2013, $50m of diamonds were stolen from an aircraft about to depart Brussels Airport by 8 men disguised as police. The criminals cut through the perimeter fencing, driving two vehicles through the

[312] Cyber Terrorism is 'biggest threat to aircraft', Daily Telegraph, http://www.telegraph.co.uk/finance/newsbysector/transport/10526620/Cyber-terrorism-is-biggest-threat-to-aircraft.html, 27 December 2013,

[313] Progress in cyber security in ATM, Eurocontrol, http://www.eurocontrol.int/news/progress-cyber-security-atm, 17 December 2013

[314] 2013 Cyber Proceedings , ATCA's Aviation Cyber Security Day 2013, www.atca.org/Cyber

[315] 2013 Cyber Proceedings , ATCA's Aviation Cyber Security Day 2013, www.atca.org/Cyber

hole before carrying out the raid and driving back through the hole. This event raised significant questions about the ease of which intruders can enter restricted airport property, the monitoring and surveillance of airport perimeters and therefore the response from emergency services in such incidences.

On 25 December 2013, two large American airports both witnessed security breaches from the airport's perimeters. At Newark Airport, USA, a man scaled the perimeter fence before crossing two runways and attempting to enter the airport's Terminal C. This breach attracted widespread media attention after the airport had invested $100m in a Perimeter Intrusion Detection System (PIDS) designed to prevent such occurrences[316].

At Phoenix Airport, Arizona, a man scaled the perimeter fence crossing the tarmac and a taxiway to approach a taxiing aircraft reportedly striking the aircraft with his hands[317].

These incidents have drawn attention in the US over the regulation and requirements of airport perimeter security. In 2013, there was no update to guidelines surrounding the requirement for perimeter security and the guidelines in place principally relate to the physical fencing and not the electronic monitoring systems of the perimeter[318]. Though some airports have elected to install intruder detection technology across their perimeters it is not a requirement or required at all airports[319]. Airport perimeter security is primarily the airport operator's responsibility which is not funded by the TSA and therefore subject to operator's budget limitations.

The FAA has awarded an estimated $58m in Airport Improvement (AIP) grants for perimeter security projects in 2012 but this is expected to decline until 2017[320].

At a European level, EC Regulation No 300/2008 published in 2008 stipulates that: 'There shall be surveillance, patrols and other physical controls at airports and, where appropriate, in adjacent areas with public access, in order to identify suspicious behaviour of persons, to identify vulnerabilities which could be exploited to carry out an act of unlawful interference and to deter persons from committing such acts[321]'In response to this European airports have investigated and upgraded new security systems for the wider airport area.

Airports, authorities and industry stakeholders will need to find a balance and a compromise to the regulation and requirements for airport perimeter security and therefore the level of investment required against considering the probability and severity of any such breach of security occurring.

---

[316] CNN, 'Inebriated' man, cross-dressed man jump airport fences in Newark, Phoenix, http://edition.cnn.com/2013/12/26/us/new-jersey-airport-security-breach/, December 27 2013

[317] USA Today, Police: Man runs onto Phoenix airport taxiway, slaps jet, http://www.usatoday.com/story/todayinthesky/2013/12/26/police-man-runs-on-to-phoenix-airport-taxiway-slaps-jet/4205669/, 27 December 2013

[318] IHS Technology, Market Insight- The Challenge of Airport Perimeter Security Highlighted by Christmas Day Breaches, January 7 2014. http://technology.ihs.com/483354/the-challenge-of-airport-perimeter-security-highlighted-by-christmas-day-breaches

[319] CNN Transcript, 'Stowaway Teen Survives Flight', Jeff Price- Aviation Security Expert, 22 April, http://transcripts.cnn.com/TRANSCRIPTS/1404/22/nday.06.html

[320] IHS, 'Alternative Energy may aid perimeter protection', 12 February 2014, http://www.ihsairport360.com/article/3706/alternative-energy-may-aid-perimeter-protection

[321] Regulation (EC) No 300/2008 Of The European Parliament And Of The Council of 11 March 2008 on common rules in the field of civil aviation security and repealing Regulation (EC) No 2320/2002 (OJ L 97, 9.4.2008, p. 72)

10 Consumer Issues

10.1 Introduction

This chapter examines the progress that took place in 2013 with regards to Aviation matters relevant for consumers, with particular emphasis on airlines and airports for whom consumers (i.e. passengers) are the primary stakeholder group.

Chapter 10 has not been developed to constitute a full chronological list of all developments in areas such as legislation and policies around consumer protection and airline and airport performance. Instead, the focus of Chapter 10 has been on a selection of key areas agreed with the European Commission. These have been identified as the hot topics in 2013 that will be examined in depth in the following sections.

Consequently, Section 10.2 of this chapter examines the recent trends and patterns on flight punctuality [322]and delays [323] both from an airline and airport perspective. An overview of the last years' trends form both an airline and an airport perspective will be examined, taking into account the impact of the Sturgeon / Nelson rulings.

Then in Section 10.3 an investigation into the recent developments on airline insolvency is undertaken.

Section 10.4 is of high importance, within which a series of topics are discussed in relation to the Air Passenger Protection Legislation EC 261/2004. Developments that occurred in 2013 are initially outlined. Then, this Section focuses on updates to the Air Service Agreements and other advancements associated with air passenger rights categories within and outside the European Union boundaries. In addition, attempts and calls for unification of passenger rights legislation are reviewed, along with an outline of similar legislation development in parallel industries. Of key interest to the European Commission as well as the audience that reads the European Commission Air Transport Market Analysis report are also any developments with regards to passenger legislation outside the European Union, which are also being addressed in the current section. Advancements initiated or completed in other States or by departments of transport around the world that either mirror the Commission's achievements to date or provide new thinking grounds have also been reviewed.

In the last Section of Chapter 10, Section 10.5, the call for global unification / convergence of the passenger rights legislation is examined. In this part of the Chapter, the ICAO stand on harmonisation of passenger protection on an international level is examined, and IATA's campaign for the development of a core set of industry principles is also revealed.

[322] Punctuality: The fraction of flights that depart or arrive at/depart from the gate no later than 15 minutes later than scheduled time to the total number of flights within a certain time frame.

[323] Delay: "The time lapse which occurs when a planned event does not happen at the planned time". Planning of Delay: influence of flight scheduling on airline punctuality, EUROCONTROL Trends in Air Traffic, Volume 7 [https://www.eurocontrol.int/sites/default/files/publication/files/tat7-planning-for-delay-2010.pdf]

10.2 Delays / Cancellations: Trends & Industry-Wide Impacts

In this Section the 2013 punctuality results for airlines and airports alike are studied, along with the effect of delays. An update on the Sturgeon / Nelson rulings is also undertaken, and the hypothetical bias of delays and cancellations on certain regions is also examined.

10.2.1 Airline Delays / Cancellations - Trends

European Scheduled and Low Cost Carriers

Overall airline punctuality in 2013 noted a mixture of performance levels. Table 10.1: below provides an overview of annual performance of the top 10 major European airlines for the year. The depicted airlines reflect those that operated nearly 2M flights in 2013 and as analysed by FlightStats Inc[324]. The results are also compared against previous years' findings (2012[325], 2011[326] and 2010[327]).

Table 10.1: European Carrier 'On Time' Arrival Performance (Scheduled & Low Cost Passenger Flights within 15 min)

Airline Category	Airline Name	On-Time Arrival Performance 2013	On-Time Arrival Performance 2012	On-Time Arrival Performance 2011	On-Time Arrival Performance 2010
Scheduled	KLM	88.03%	87.85%	86.79%	83.42%
Scheduled	Iberia	86.03%	67.84%	52.32%	58.50%
Scheduled	SAS	85.83%	87.93%	88.22%	86.47%
Scheduled	Lufthansa	84.18%	83.51%	79.16%	75.33%
Scheduled	Aeroflot	82.71%	81.28%	79.11%	81.40%
Scheduled	Alitalia	82.67%	83.67%	81.81%	76.17%
Scheduled	Swiss International	79.73%	80.25%	82.03%	76.91%
Scheduled	Air France	79.21%	80.77%	79.68%	74.73%
Scheduled	British Airways	71.56%	75.21%	78.74%	73.51%
Low Cost	Thai AirAsia	90.85%	N/A	N/A	N/A
Low Cost	Virgin America	84.06%	83.67%	N/A	N/A
Low Cost	Vueling Airlines	82.44%	84.19%	81.99%	68.37%

[324] FlightStats 2013 On-Time Performance Service Awards, at http://cms.flightstats.com/wp-content/uploads/2014/02/FlightStats-2013-On-time-Performance-Service-Awards-2-1.pdf?_sm_au_=i5VwMfk0wPn5w53N

[325] 2012 Year-end Report on Airport and Airline On-time Performance, Date: 04 January 2013, at http://flightstats.sightworks.net/documents/2012-Year-end-Report-Airport-and-Airline-On-Time-Performance.pdf

[326] 2011 Year-end Report on Airport and Airline On-time Performance, Date: 04 January 2012, at http://images.emailroi.com/users/flightstats/library323.pdf

[327] 2010 Year-end Report on Airport and Airline On-time Performance, Date: 04 February 2011, at http://images.emailroi.com/users/flightstats/library266.pdf

Airline Category	Airline Name	On-Time Arrival Performance 2013	On-Time Arrival Performance 2012	On-Time Arrival Performance 2011	On-Time Arrival Performance 2010
Low Cost	AirTran	80.16%	87.24%	84.89%	83.61%
Low Cost	Southwest Airlines	77.09%	77.53%	70.63%	76.29%
Low Cost	Jetstar Airways	76.47%	N/A	N/A	N/A
Low Cost	AirAsia	74.82%	N/A	N/A	N/A
Low Cost	JetBlue Airways	74.55%	79.36%	74.21%	76.69%
Low Cost	Frontier Airlines	74.50%	77.19%	78.62%	81.61%

Source: Mott MacDonald

As indicated by the findings, some of the Scheduled carriers (KLM and Swiss International) under the 2M flights category showed punctuality improvement over time even though these airlines carried more passengers compared to 2010 passenger volumes. At the same time, performance deterioration was identified for carriers who operated out of the congested European hubs (British Airways, Air France and Lufthansa).

The Low Cost airlines' group is also reflected in the table; however it is worth noting that two of Europe's major LCCs are missing, due to lack of data provision to FlightStats. Therefore, it is not possible to assess LCC punctuality performance over time for this reason. However the 2013 findings indicate that overall a lower proportion of LCC flights arrived on-time.

Another group of airlines analysed by FlightStats Inc. is the North American major carriers group. Considering the findings of this group, none of the airlines in the top 10 list (i.e. those carriers that operated 4.9M flights or more in 2013) achieved an on-time arrival performance of 90% or more. Moreover, and across the group, performance also deteriorated year-on-year and it can be attributed to airport and airspace congestion, as well as weather incidents that affected both the North American and European continents.

The Middle East and the African major carriers form another set of airline operators for which punctuality data is reflected in the 2013 On-Time Performance Report. Worth noting that out of all the major carriers reflected in this category region only two (Gulf Air and South African Airways) recorded an on-time performance for over 90% of the tracked flights, followed by Saudia (85.8%), Turkish Airlines (81.94%) and Qatar Airways (80.56%).

Out of all the groups, the FlightStats 'On-Time' Performance Service (OPS) Awards for the best 2013 arrival performance[328] amongst airline categories were awarded as follows.

Table 10.2: FlightStats On-time Performance Service (OPS) Awards by Airline Category

Category	Best Carrier	On-Time Arrival (within 15 min)
Major International Airlines	Japan Airlines	88.94%
Major Airline Network Airlines (Mainline & Regional)	Japan Airlines	89.75%

[328] On-Time Performance Awards, at http://www.flightstats.com/company/media/on-time-performance-awards/

Category	Best Carrier	On-Time Arrival (within 15 min)
North America Major Airlines	Alaska Airlines	87.08%
Europe Major Airlines	KLM	88.03%
Asia-Pacific Major Airlines	Japan Airlines	88.94%
Middle East & Africa Major Airlines	Gulf Air	90.73%
South America Major Airlines	Copa Airlines	89.83%
Low Cost Airlines *(NEW category)*	Thai Air Asia	90.85%

Source: Mott MacDonald

The Asian carriers continue to be the best performers in the international front with Japan Airlines awarded the OPS title for the second consecutive year.

Compared to last year's OPS 'On-Time' Arrival' performance award statistics, a decline is found across all categories with the European group recording the biggest year-on-year performance deterioration, at -4.3% points. In contrast, the South American Airlines category showed the largest year-on-year improvement, at +9.8% points.

Regional Carriers

Table 10.3 below provides the 2013 on-time performance findings for the European regional airlines, as published by the European Regions Airlines Association (ERA)[329], tabulated against previous full-years' findings (2012[330], 2011 and 2010).

Table 10.3: European Carrier 'On Time' Arrival Performance (Regional Passenger Flights within 15 min)

Airline Category	Airline Name	On-Time Arrival Performance 2013*	On-Time Arrival Performance 2012	On-Time Arrival Performance 2011	On-Time Arrival Performance 2010
Regional	Aegean Airlines	91.3%	91.8%	85.0%	86.7%
Regional	Aer Arann	80.9%	82.6%	83.4%	82.0%
Regional	Air Iceland	89.2%	75.3%	85.5%	87.0%
Regional	Air Nostrum	79.7%	85.8%	78.5%	79.3%
Regional	Binter Canarias	95.2%	94.9%	93.3%	93.3%
Regional	Braathens Regional	91%	90.2%	N/A	N/A
Regional	Carpatair	80.8%	79.5%	84.4%	77.6%
Regional	CityJet	86.6%	87.9%	89.3%	83.2%
Regional	Darwin Airline	81.3%	86.8%	N/A	N/A
Regional	Eastern Airways	80.3%	85.1%	89.1%	86.3%
Regional	Estonian Air	89.6%	83.9%	N/A	/A
Regional	Hop! Régional	87.7%	N/A	N/A	N/A
Regional	Malmö Aviation	89.0%	87.7%	91.8%	84.7%
Regional	Montenegro Airlines	98.7%	98.3%	97.8%	84.3%

329 ERA 2013 Punctuality Performance.pdf

330 http://www.eraa.org/library/statistics/cat_view/104-library/72-statistics/179-airline-and-airport-monthly-statistics/503-2012

Airline Category	Airline Name	On-Time Arrival Performance 2013*	On-Time Arrival Performance 2012	On-Time Arrival Performance 2011	On-Time Arrival Performance 2010
Regional	Olympic Air	92.6%	93.4%	90.2%	N/A
Regional	PGA Portugália	82.8%	N/A	N/A	N/A
Regional	SATA Air Açores	85.5%	88.5%	87.1%	75.1%
Regional	Sky Work Airlines	90.2%	78.5%	68.5%	49.8%
Regional	Widerøe	83.9%	87.0%	87.2%	89.3%

** 2013 results for the period Jan-Jun, whereas the remaining years reflect Jan-Dec findings. Thus a like-for-like comparison is not possible*

Source: European Regional Airlines Association

Similar to the conventional carriers' performance, punctuality levels for regional carriers indicated a declining trend in 2013 in general levels.

To effectively evaluate a carrier's performance on delivering passengers to their destination on time (i.e. within 15 minutes of the scheduled departure time) it is also essential to understand the key drivers that impact on-time achievement. It is therefore crucial to review airport punctuality performance, which is attempted in the section that follows.

10.2.2 Airport Delays / Cancellations - Trends

Central Office of Delay Analysis - CODA

Airport delay information and statistics in Europe are collated and reported by CODA, the Central Office for Delay Analysis which falls under the umbrella of EUROCONTROL. The airport punctuality results are derived from the CODA database which includes delay information provided directly by the airlines.

Every year CODA issues the CODA Digest, a report which reflects delays in the European Air Transport industry, to report airport performance within the region. One of the findings that the report explores is the top 20 delay-affected airports in the regions. Table 10.4 below presents the 2013 top 20 European airports affected by departure delays.

Table 10.4: Top 20 Affected Departure Airports 2013

Rank	Departure Airport	ICAO Code	Average Ddelay per Departure (mins)	Average Delay per Flight	Average Delay per Delayed Departure	Percentage Delayed Departures
1	LISBOA	LPPT	14.6	11%	30.3	48.2%
2	LONDON/HEATHROW	EGLL	13.1	5%	26.5	49.5%
3	LONDON/GATWICK	EGKK	12.8	7%	27.8	46.1%
4	ROME FIUMICINO	LIRF	12.6	23%	23.0	54.7%
5	MANCHESTER	EGCC	12.6	-8%	29.5	42.5%
6	PARIS CH DE GAULE	LFPG	12.2	7%	25.2	48.2%
7	PARIS ORLY	LFPO	11.5	19%	24.8	46.5&
8	VENEZIA TESSERA	LIPZ	11.3	16%	31.0	36.5%
9	LONDON/LUTON	EGGW	10.8	-8%	27.5	39.2%
10	PALMA DE MALLORCA	LEPA	10.5	-3%	28.9	36.4%
11	ALICANTE	LEAL	10.4	11%	28.7	36.1%
12	MILANO MALPENSA	LIMC	10.3	8%	27.7	37.2%

Rank	Departure Airport	ICAO Code	Average Ddelay per Departure (mins)	Average Delay per Flight	Average Delay per Delayed Departure	Percentage Delayed Departures
13	BIRMINGHAM	EGBB	10.2	7%	27.3	37.4%
14	NICE	LFMN	10.2	4%	26.1	39.0%
15	ANTALYA	LTAI	10.0	-18%	29.8	33.7%
16	ZURICH	LSZH	9.8	-2%	19.0	51.4%
17	BRUSSELS NATIONAL	EBBR	9.8	10%	24.2	40.3%
18	GENEVE COINTRIN	LSGG	9.7	10%	26.3	36.8%
19	DUESSELDORF	EDDL	9.5	11%	24.1	39.6%
20	MALAGA	LEMG	9.5	-18%	27.8	34.2%

Source: CODA Digest – Annual 2013[331]

Despite the year-on-year delay improvement noted in 2013 (14.6 minutes in 2013 vs. 16.4 minutes in 2012), the results indicate that Lisbon remained the worst performer for the second year in terms of the longest average delay. Considering that both major international London Airports (Heathrow and Gatwick) are becoming increasingly congested, it comes as no surprise that average aircraft departure delay at both airport locations has increased notably since 2011. Heathrow airport's two-runway system is now operating in excess of 98% capacity utilisation, whilst Gatwick airport is the busiest singe-runway airport in Europe.

These facts are enough to explain why incidents such as seasonal weather, industrial actions and aircraft incidents cause operational disruption to these locations. This is also supported by the 2013 'all causes delay' CODA report[332] which found that average delay per flight for 2013 was 9.3 minutes, marginally below the 2012 figure of 9.5 minutes per flight. The analysis attributed this to an overall decline in reactionary delay per flight (delay caused by late arrival of aircraft or crew from previous journeys[333]). It was also revealed that both airline-related delay (2.8 minutes per flight in 2013) and arrivals punctuality (26% of flights landed on time or five minutes before/after the scheduled arrival time) were sustained at the same levels as last year, whereas the volume of flights delayed on departure increased by 0.6% points to 36.1% in 2013.

It is worth noting that overall average delays in the continent have halved across some airports since 2010[334]. Overall, average departure delay time of the top 20 affected airports ranged between 17.9 and 29.7 minutes in 2010 versus 9.5 and 14.6 minutes in 2013.

This can be attributed to a number of operational improvement initiatives that have been implemented in the last few years such as the Airport Collaborative Decision Making approach (A-CDM), winter resilience programmes implemented at Heathrow and Gatwick airports, as well as the application of industry standards and KPIs set by airports and airlines alike. The ultimate goal of these initiatives promotes the advancement of an airport's operational efficiency, the reduction of delays and the improvement of flight

[331] CODA Digest - Delays to Air Transport in Europe – Annual 2013, at https://www.eurocontrol.int/sites/default/files/content/documents/official-documents/facts-and-figures/coda-reports/coda-digest-annual-2013.pdf

[332] https://www.eurocontrol.int/sites/default/files/publication/files/140331-delays-2013-all-causes.pdf

[333] http://www.eurocontrol.int/lexicon/lexicon/en/index.php/Reactionary_delay

[334] CODA Digest – Delays to Air Transport in Europe Annual 2010, at http://www.eurocontrol.int/sites/default/files/content/documents/official-documents/facts-and-figures/coda-reports/CODA%20Digests%202010/coda-digest-annual-2010.pdf

punctuality. It is fair to therefore conclude that these methods have had some positive impact to punctuality.

Considering initiatives related to performance, a prime example of applying a more 'qualitative' approach to ensuring that passengers are being cared for both during periods of disruption as well as during busy periods is the Heathrow Volunteer Ambassadors programme. With customer care and passenger experience improvement in the heart of this programme, Heathrow Airport officially launched its Volunteer Ambassadors programme in 2013[335]. This programme is a continuation of the successful volunteering and customer service support initiatives that took place over a series of sporting events, such as the 2011 UEFA Champions League and the 2012 London Olympics and Paralympics. In parallel, and with the aim to mitigate against passenger disruption and provide care when flight delays and cancellations impact the airports and the airlines' performance, the airport operator developed an additional mechanism where back-office staff are deployed during 'crisis' periods (seasonal weather, industrial actions and other incidents that impact an airport's and airlines' operations) to provide passenger care and support.

Research and Innovative Technology Administration (Bureau of Transport Statistics) - RITA

On the other side of the Atlantic, the US Department of Transport unit of Research and Innovative Technology Administration (RITA) Bureau of Transport Statistics is responsible, amongst other things, for the analysis of transportation research and statistics with the aim to improve decision-making and promote best practise in performance.

The RITA website provides a wealth of information with regards to Air Transportation; the user can find amongst other things traffic, aircraft, fare and financial data, on-time performance statistics, as well as Air Travel Consumer Reports.

Due to the discrepancy of reporting formats between the CODA and RITA databases, an airport comparison amongst the two regions has not been possible. However a sample table reflecting the 2013 annual punctuality ranking of major US airport on-time departure performance is reflected below.

Table 10.5: Ranking of Major US Airport 2013 On-Time Departure Performance[336]

Rank	Jan 1 - Dec 31, 2012	%	Rank	Jan 1 - Dec 31, 2013	%
1	Salt Lake City, UT (SLC)	89.83	1	Salt Lake City, UT (SLC)	86.69
2	Portland, OR (PDX)	87.89	2	Portland, OR (PDX)	86.16
3	Minneapolis/St. Paul, MN (MSP)	87.82	3	Seattle, WA (SEA)	85.59
4	Seattle, WA (SEA)	86.91	4	Minneapolis/St. Paul, MN (MSP)	83.95
5	Charlotte, NC (CLT)	86.73	5	Washington, DC (DCA)	82.83
6	Tampa, FL (TPA)	85.62	6	Detroit, MI (DTW)	82.36
7	Phoenix, AZ (PHX)	85.21	7	Phoenix, AZ (PHX)	81.98
8	Philadelphia, PA (PHL)	84.72	8	Charlotte, NC (CLT)	81.72
9	Detroit, MI (DTW)	84.43	9	Tampa, FL (TPA)	81.44
10	Washington, DC (DCA)	84.40	10	San Diego, CA (SAN)	81.07
11	Boston, MA (BOS)	84.03	11	Boston, MA (BOS)	80.96
12	Atlanta, GA (ATL)	83.90	12	Los Angeles, CA (LAX)	80.86
13	Orlando, FL (MCO)	83.81	13	Miami, FL (MIA)	80.70

[335] Heathrow Volunteer Ambassadors, at http://volunteers.heathrow.com/volunteer_ambassadors.php

[336] http://www.rita.dot.gov/bts/subject_areas/airline_information/airline_ontime_tables/2013_12/table_06

14	San Diego, CA (SAN)	83.73	14	Philadelphia, PA (PHL)	80.69
15	Fort Lauderdale, FL (FLL)	82.84	15	Orlando, FL (MCO)	79.46
16	New York, NY (LGA)	82.51	16	Atlanta, GA (ATL)	79.26
17	Los Angeles, CA (LAX)	81.81	17	New York, NY (LGA)	78.00
18	New York, NY (JFK)	81.38	18	Houston, TX (IAH)	77.97
19	Las Vegas, NV (LAS)	80.93	19	Fort Lauderdale, FL (FLL)	77.93
20	Denver, CO (DEN)	78.76	20	New York, NY (JFK)	77.31
21	Dallas/Fort Worth, TX (DFW)	78.73	21	San Francisco, CA (SFO)	76.74
22	Miami, FL (MIA)	77.87	22	Las Vegas, NV (LAS)	76.65
23	Baltimore, MD (BWI)	77.74	23	Washington, DC (IAD)	76.36
24	Washington, DC (IAD)	77.68	24	Baltimore, MD (BWI)	73.73
25	Houston, TX (IAH)	77.16	25	Dallas/Fort Worth, TX (DFW)	73.61
26	Chicago, IL (ORD)	76.58	26	Newark, NJ (EWR)	72.65
27	Chicago, IL (MDW)	76.02	27	Denver, CO (DEN)	72.51
28	San Francisco, CA (SFO)	73.29	28	Chicago, IL (ORD)	70.37
29	Newark, NJ (EWR)	71.21	29	Chicago, IL (MDW)	66.60

Although in previous reports it was possible to undertake major airport comparisons with regards to on-time performance, the discontinuation of the relevant annual report by Flightstats Inc. is not allowing us to do so in the current report.

Similar to the overall CODA findings, on-time departure performance of US airports has declined since 2012. This is evident despite the introduction of legislation regarding delays and cancellations and a reduction on the frequencies of these[337], which suggests that other factors do play a role in punctuality performance such as seasonal weather and increasingly congested airport infrastructure.

Updates on Punctuality Performance Reporting – US and UK

In 2013, both RITA and the UK CAA demonstrated the continuous improvement, which is highly required in an industry as dynamic as the aviation industry. The two bodies thus initiated improvements to the performance information that they provide to the general public. On a wider European level, the second annual FABEC (Functional Airspace Block European Central) Performance Report was published in 2013, reporting the progress of the KPIs set as part of the FABEC Treaty such as the streamlining of routes, efficiency and cost-effectiveness improvement, capacity adequacy and pollution reduction within the airspace of the signatories of the Treaty.

On 13 March 2013 RITA issued a Memo[338] through which it announced that the Bureau will soon start to audit airlines' and airports' compliance against and requirements for contingency plans with regards to long, on-board flight delays. The Memo suggested that such an audit would begin in the same month. This initiative is an extension of the Federal Aviation Administration (FAA) Modernisation and Reform Act of 2012 which requires that airports establish contingency plans for long, on-board delays and the DOT to assess the impact of these on passengers and provide recommendations that address the impact of flight delays on air passengers.

[337] ICAO Information Paper: Effectiveness of Consumer Protection Regulation , at http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-ip001_en.pdf

[338] http://www.oig.dot.gov/sites/dot/files/Long%20On-Board%20Flight%20Delays%20Announcement.pdf?_sm_au_=i5VH0jnQ5ZR0NjnP

Similar to the above advancement, the RITA website also includes a series of new airline and airport performance disclosures such as tarmac times by year, month, airport or airline, monthly reporting of regularly scheduled flights cancelled 5% or more, as well as chronically delayed flights, i.e. those with more than 50% delayed arrivals of more than 30 minutes of scheduled arrival time[339].

The UK CAA presented on 06 June 2013 an update of its regulatory function with regards to its publication duties[340]. Following the Civil Aviation Act of 2012, the CAA is now able to 'require provision of information to consumers and the public (unlike other regulators)', as the CAA is now able to:

- Publish, or arrange for others to publish, such information as it feels is appropriate to assist consumers to compare air transport services and facilities;
- Publish, or arrange for others to publish, such information as it feels is appropriate relating to the environmental effects of civil aviation in the UK;
- Consult upon and publish a Statement of Policy for carrying out these functions.

But most importantly, the Act now enables the CAA to:

- Specify the form and manner of publication by others (e.g. star rating, raw data);
- Conduct or fund related research;
- Use enforcement to obtain information and/or require publication;
- Publish guidance with a view to improving standards and/or mitigating adverse environmental effects.

It is therefore fair to assume that this implies that the UK CAA is becoming a comparator to RITA as it will provide a variety of comparative information with regards to aviation, starting with punctuality, long delays, cancellations and mishandled baggage by airline and airport, as well as information on the price of optional services such as baggage fees. However, the CAA proposes the inclusion of other key information such as carbon emissions, noise, and airport terminal walking distances.

The proposed timetable of delivery for this initiative suggested that information would start becoming available in early 2014. Although progress on this is yet unknown, the prospect of having a single database where from passengers are able to review an airport's or an airline's performance and gain an understanding on the facilities offered, as well as performance levels is an exciting prospect.

Over the last few years, the Functional Airside Blocks (FABs) have developed from concepts (in 2004 when they were first defined under the Single European Sky legislation package) to initiatives and tools that aim to drive airspace efficiency and improve delays[341]. The 2013 report presents the findings against performance in the five key performance areas (KPA) of safety, environment, capacity, cost-efficiency and military mission effectiveness the key performance areas and indicators, and punctuality is one of these areas.

The aim of the META-CDM (Multimodal, Efficient Transportation in Airports – Collaborative Decision Making) European project is to advance CDM more than techniques that support resilience from crisis situations. META-CDM intends to address the needs of the passenger.

[339] http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/subject_areas/airline_information/index.html

[340] http://www.ukaccs.info/13almfiles/13caapresentinfopowers.pdf?_sm_au_=i5VH0jnQ5ZR0NjnP

[341] http://ec.europa.eu/transport/modes/air/single_european_sky/fab/index_en.htm

10.2.3 Airport Constraints and Punctuality

Airport infrastructure supply and more particularly aircraft stands, connecting facilities in addition to airfield and airspace performance and capacity are some of the crucial factors that impact on the punctuality of flights.

This has been a constant challenge for major airport hubs such as Heathrow that has experienced capacity and operational constraints whilst working towards providing a strong performance, improving passenger and airline experience and remaining competitive.

This is why airports in major hub European airports have over the last few years engaged in major infrastructure and service upgrades to ensure that a reliable, punctual and quality service is offered to passengers. Heathrow Airport has delivered new stands for T5, T3[342] and with the opening of the new T2 terminal on 04 June 2014[343] striving to improve passenger experience, optimise capacity and provide operational efficiencies.

In 2013, Lufthansa recorded the best figures for punctuality in its history with more than 85% of flights departing out Frankfurt and Munich airports within 15 minutes of the scheduled departure time as the airport invested in improvements on transfer connections and baggage services and infrastructure improvements such as Munich Airport's satellite terminal and Frankfurt's north-west runway[344].

10.2.4 The Impact of the Sturgeon / Nelson Rulings

In the 2009 Sturgeon judgment, the CJEU ruled that although Regulation (EC) 261/2004 did not explicitly give any right to fixed-rate compensation to passengers whose flights are delayed, the Regulation should be interpreted consistently with the principle in EU law of equal treatment. This was later reinforced by the Nelson judgment on 23rd October 2012, where it was ruled that passengers with a delay of up to three hours or more would be entitled to the same right to compensation as passengers whose flights had been cancelled[345]. Reaction to the Nelson ruling has been positive amongst consumer rights groups, with the CAA (designated National Enforcement Body in charge of the Regulation in the UK) Director of Regulatory Policy stating that 'it offers much needed clarity for passengers, the airline industry and the CAA about when compensation must be paid following delays.'[346]

In the UK the altercation of Regulation (EC) 261/2004 was not able to be legally implemented until September 2013. It was used successfully for the first time a few weeks later when a couple was awarded £680 jointly after a 22 hour delay to a Thomas Cook flight from Tenerife in 2009[347]. Between the time of the

[342] http://www.heathrowairport.com/file_source/HeathrowAboutUs/Downloads/PDF/SCBP-2013/strategic-capital-business-plan-2013_full-document_LHR.pdf

[343] http://www.heathrowairport.com/static/Heathrow/Downloads/PDF/terminal-2-brochure_LHR.pdf

[344] http://www.lufthansagroup.com/en/press/news-releases/singleview/archive/2014/january/20/article/2768.html?_sm_au_=i5Vq06TVqVzzqRTn

[345] CJEU upholds Sturgeon judgment, at http://www.lexology.com/library/detail.aspx?g=2ff88ccb-7233-4291-abd7-ea4b26293cdd&_sm_au_=i5VwMfk0wPn5w53N

[346] Regulation 261 in practice after ECJ Grand Chamber's decision on Sturgeon, Date: 18 February 2013, at http://www.twobirds.com/en/news/articles/2013/regulation261-practice-ecj-grand-chambers-decision-sturgeon0213?_sm_au_=i5VwMfk0wPn5w53N

[347] Why a three-hour flight delay could now get you £500: how to claim compensation after couple's landmark court victory, Datre: 13 September 2013, at http://www.thisismoney.co.uk/money/holidays/article-2271213/How-claim-EU-flight-delay-compensation-EC-261-2004.html?_sm_au_=i5VwMfk0wPn5w53N

Nelson ruling and February 2013, the CAA received over 500 calls and emails relating to flight delays. In addition, 397 new files were opened through or with the assistance of the CAA whilst around 400 existing files were reopened. Furthermore, the CAA received 23,440 flight delay claims from the 12 months up to March 2014. This was a significant increase from 6,028 claims in the same period the previous year. The CAA was able to find in favor of around 40% of cases[348].

However there has been widespread inconsistency in the adoption of the Sturgeon and Nelson rulings. One of the problems relates to the fact that individual member states are free to regulate how far back a claim can be made by a consumer. For example, in the UK a claim can be made 6 years prior to the date of the claim[349]. Airlines are trying to counteract this by referencing the Montreal and Warsaw conventions, which imply that there is a two year limit on the claim date. This effort was deemed unsuccessful for KLM, when the airline tried to reference the ruling of the Montreal convention in the case of Cuadrench Moré, when a passenger claimed compensation four years after the cancellation of his trip[350].

Another area of confusion relates to the understanding of what constitutes 'extraordinary circumstances.' A draft document prepared by the National Enforcement Bodies and posted on the EC's website attempts to clarify the meaning of these extraordinary circumstances[351]. This situation should hopefully be clarified with the proposed amendment to Regulation (EC) 261/2004, which was published in March 2013.

10.3 Airline Insolvency: Recent Developments

In this section we examine developments that occurred in 2013 with regards to the protection of air passengers from airline insolvency for consumers on both standalone tickets (flight-only), as well as on package travel.

10.3.1 Standalone Tickets

On the 18 March 2013, the European Commission issued a Communication relating to air passenger protection in the event of airline insolvency[352]. Through the Communication, the Commission noted that a survey conducted for the Directorate General for Justice of the Commission revealed that passenger awareness on airline insolvency protection is generally poor – 44% of the respondents were aware whether they were protected if the airline they were booked on became insolvent. It is evident that the Commission is conscious of the impact of airline insolvency to passengers as (1) neither air carriers nor the competent authorities have been able to sufficiently ensure in advance that necessary appropriate arrangements are in place to re-route flight only passengers and assist them in the interim to provide ensure that their other rights are respected (e.g. information, assistance, and reimbursement), and (2)

[348] Flight delay compensation claims are still being grounded: Complaints have rocketed, but airlines are resisting both regulators and court rulings as they refuse to pay, Date: 27 April 2014, at http://www.theguardian.com/money/2014/apr/28/flight-delays-compensation-ryanair-airlines?_sm_au_=i5VwMfk0wPn5w53N

[349] EU Air Passenger Rights Revision: An Opportunity to Swing Back the Pendulum?, Date: November 2013, at http://whoswholegal.com/news/features/article/31034/eu-air-passenger-rights-revision-opportunity-swing-back-pendulum/?_sm_au_=i5VwMfk0wPn5w53N

[350] Joan Cuadrench Moré v Koninklijke Luchtvaart Maatschappij, Date: 22 November 2012, at http://curia.europa.eu/jcms/upload/docs/application/pdf/2012-11/cp120150en.pdf

[351] Draft list of extraordinary circumstances following the National Enforcement Bodies (NEB) meeting held on 12 April 2013, at http://ec.europa.eu/transport/themes/passengers/air/doc/neb-extraordinary-circumstances-list.pdf?_sm_au_=i5VwMfk0wPn5w53N

[352] http://www.ulc.gov.pl/_download/kopp/komunikat_ke.pdf

passengers' rights under Regulation (EC) No 261/2004 have not been fulfilled by the failing carrier - in particular rerouting stranded passengers and in providing assistance (such as accommodation).

The Communication notes that financial support tools in the forms of remedies and partial solutions to address the flight-only issue are in place in individual Member States – the Rejsegarantifonden fund in Denmark, the Scheduled Airline Failure Insurance (SAFI) in the UK and Ireland, credit card companies and rescue fares such as the one issued by Wizz Air for passengers affected by the sudden closure of Belle Air Europe[353] and airline - these offer limited protection. The Billing Settlement Plan (BSP) scheme offered by IATA-accredited travel agents is only applicable for passengers who booked within the payment period i.e. at most up to 30 days before the flight; the Rejsegarantifonden travel guarantee fund only provides protection to passengers on flights from Denmark on carriers established in Denmark and Sainsbury's Bank travel disruption cover on airline insolvency only covers flights booked in the UK; whilst the credit card company refund is usually limited to the cost of the original ticket and in some cases subject to a minimum amount.

Citing the proactive approach taken at a national level in early 2012 by Spain and Hungary following the suspension of operations by Spanair and Malév and the evidence that this sort of engagement can significantly improve the situation for affected passengers, the Commission encourages the adoption of the following measures to strengthen the licensing oversight of EU air carriers under Regulation (EC) 1008/2008:

- Encourage the national authorities competent for the enforcement of Regulation (EC) 1008/2008 and Regulation (EC) 261/2004 to co-ordinate their actions to ensure appropriate monitoring of the financial position of air carriers and where necessary adopt a co-ordinated approach to the suspension of their operations to minimise the impact on passengers.
- Encourage greater co-operation and sharing of best practice and information between the regulatory authorities of member states.
- Engage with EU air transport associations to formalise the existing voluntary agreements on the provision of rescue fares and their effective promotion.
- Engage with EU airport associations to develop voluntary arrangements to complement "rescue fares", for example offering reduced airport charges in such situations to minimise the costs to passengers.
- Engage with industry to encourage the wider and more systematic availability of SAFI or similar insurance products across the EU.
- Engage with the International Air Transport Association (IATA) to encourage the adoption of a service level agreement to ensure that the Billing Settlement Plan (BSP) is used to ensure the largest possible number of passengers recover what they paid before an air carrier is declared insolvent.
- Encourage the wider and more systematic availability of information about credit card refund schemes or similar products in a member state to allow passengers to protect themselves against the risk of insolvency under national law.

The Commission will review the performance and effectiveness of these measures for two years prior to deciding whether a legislative initiative is needed to guarantee the protection of passengers in the case of airline insolvency.

[353] https://wizzair.com/en-GB/about_us/news/wizen212

10.3.2 Package Travel

In the EEA, the protection of air passengers on packaged travel against airline insolvency is currently provided through various means. These can range from mutual funds to bank guarantees, as well as insurance products. In addition, these products are managed by different organisations such as government agencies and commercial entities[354].

Since the implementation of the ATOL protection scheme in April 2012, there has been a marked improvement in consumer protection against airline insolvencies in the UK. An estimated 10M certificates were issued between the scheme's inception and October 2013, covering around 20M passengers. The situation has also been assisted by the fact that only eleven ATOL holders failed in 2012/13 compared with twenty-three in 2011/12 period.

The UK Civil Aviation Authority (CAA) launched a new long-term project in August 2013 to improve compliance with ATOL regulations amongst UK-based travel companies[355]. In this initial stage, the CAA has partnered with Leicester City Council to offer advice to local businesses as to identifying mechanisms to be protecting consumers. The project also aims to increase consumer awareness of the scheme and thus to certify that air passengers are informed of receiving an ATOL certificate before transferring any payment. It is also hoped that this campaign has the potential to spread consumer awareness to other cities across the UK.

As of September 2013, the UK now has a total of eight accredited bodies that are compliant with the ATOL financial protection scheme[356]. As a body member, a travel company does not have to hold their own individual ATOL certification in order to sell protected holidays. The potential future addition of accredited bodies is hoped to raise consumer awareness and ensure that more consumers benefit from financial protection in case an airline faces insolvency. Moreover, this is anticipated to encourage further travel businesses to obtain ATOL protection.

In the Air Travel Insolvency Protection Advisory Committee's (ATIPAC) 2012-13 annual report, the Committee embraced the ATOL protection reforms, stating that 'the clarity about financial protection for air-based holidays has improved, both with the extension of ATOL to encompass the Flight-Plus business (i.e. the booking of dynamic packages), and with the ATOL certificate'[357]. Despite the welcome of the reforms by ATIPAC, a number of concerns were raised, particularly surrounding the issue of firms acting as 'agents for the consumer'. This is a potential loop-hole for travel companies to exploit as firms operating under this business model may not be obliged to operate under an official ATOL protected scheme. The loop-hole is highlighted by the fact that certain firms claim to be purchasing package holidays on behalf of consumers, rather than selling directly to them. It has been suggested by ATIPAC that further legislative action is required so that consumers can further appreciate and understand the risks associated with this.

---

[354] Proposal for a Directive on Package Travel and Assisted Travel Arrangements - Insolvency Implementers' Views – CAP1147, Date: January 2014, at http://www.caa.co.uk/docs/33/CAP%201147%20Proposal%20for%20a%20Directive%20on%20Package%20Travel.pdf?_sm_au_=i5VwMfk0wPn5w53N

[355] CAA teams up with trading standards in new campaign to improve ATOL compliance, Date: 12 August 2013, at http://www.caa.co.uk/application.aspx?catid=14&pagetype=65&appid=7&newstype=n&mode=detail&nid=2268&_sm_au_=i5VwMfk0wPn5w53N

[356] Barrhead Travel confirmed as latest ATOL accredited body, Date: 09 September 2013, at http://www.caa.co.uk/application.aspx?catid=14&pagetype=65&appid=7&newstype=n&mode=detail&nid=2279

[357] ATIPCA Annual Report 2012/2013 – CAP1082, Date: July 2013, at http://www.caa.co.uk/docs/33/20130725AnnualReport2013.pdf

In April 2013, a few minor additions were implemented to ATOL legislation. This includes the exemption expiry for travel agents in the Republic of Ireland, meaning that agents selling flights or packages from the Republic of Ireland must now obtain an ATOL certificate. In addition, there is an exemption from the need to issue ATOL certificates for ATOL holders selling packages on a credit basis. There was also an amendment to some existing exemptions requiring those persons exempt from the need to hold an ATOL certificate to declare that the sale is not protected under the ATOL scheme.

In May 2013, the Department for Transport issued a Call for Evidence for a Review of the Package Travel Directive and ATOL implementation and funding arrangements. On the issue of overlapping protection, the CAA issued a response stating that, 'under existing Credit Card Agreements, refunds to customers who bought ATOL protected holidays and flights with credit cards from agents are all met by the ATT, but this is a matter of discretion rather than legal necessity and could be changed'[358]. A new policy may mean that if an ATOL holder became insolvent, the CAA would expect the card issuer to reimburse the consumer. The card issuer would recharge the refund to the merchant acquirer which issued the travel agent with card payment facilities, and the merchant acquirer would in turn recharge the travel agent which took the payment. This may lead to agents being required to carefully examine the creditworthiness of certain ATOL holders, which is clearly not a purpose of the ATOL scheme.

In July 2013, the EU Commission published a proposal for a new Directive on package travel and travel assisted arrangements. Consequently, the CAA organised a workshop for implementers of the Package Travel Directive (PTD) and a report published in January 2014 emphasised a number of key points. It was noted that the definition of a 'package' was a notable improvement on the existing version due to its clarity and comprehensiveness, and its usage is expected to be effective[359]. However, some confusion was created due to the addition of the Assisted Travel Arrangement (ATA) as an extra business category. This could have the potential to create misunderstanding amongst passengers unable to identify the difference between a financially protected holiday and a fully-protected package. This resulted from a concern that firms are being offered an alternative arrangement that offers less protection despite the deal being almost identical to some types of package. This could be exacerbated further if businesses subtly alter sales methods to avoid the full range of package protections.

One major concern of the PTD proposal shared between the CAA and ATIPAC is with regard to the gap in the protection for sales by businesses outside of the EEA[360] which may arise from problems potentially faced while the PTD requirements are enforced outside of Member States' territory. In relation to Article 15 of the proposal, obligations are imposed on Member States, but only with respect to organisers and retailers 'established in their territory'. This was a major concern for ATIPAC, who recognised that businesses outside of Member States could sell deals to consumers within Member States without having any certainty over financial security.

[358] CAA response to "Review of Package Travel Directive and ATOL implementation and funding arrangement – call for evidence", Date: August 2013, at http://www.caa.co.uk/docs/1092/2013DfTATOLCall%20for%20evidence%20-%20CAA%20response1.1.pdf

[359] Proposal for a Directive on Package Travel and Assisted Travel Arrangements - Insolvency Implementers' Views – CAP1147, Date: January 2014, at http://www.caa.co.uk/docs/33/CAP%201147%20Proposal%20for%20a%20Directive%20on%20Package%20Travel.pdf?_sm_au_=i5VwMfk0wPn5w53N

[360] Air Travel Insolvency Protection Advisory Committee: Response to the Department for Business, Innovation and Skills (BIS) Call for Evidence on the European Commission's Proposal for a New Directive on Package Travel and Assisted Travel Arrangements, at http://www.atipac.org.uk/docs/1112/PACKAGE%20TRAVEL%20DIRECTIVE%20ATIPAC%20Response%20FINAL.pdf?_sm_au_=i5VwMfk0wPn5w53N

In March 2013, the EU Commission issued a Communication on passenger protection in the event of airline insolvency. However, as the state of the European airline industry was unfavourable, legislative measures were avoided, and instead a series of non-legislative measures were suggested for implementation for the next couple of years. The effectiveness of these measures will be assessed by the EU Commission in 2015, when the need for further legislative initiatives for passenger protection against airline insolvency will be decided[361]. This Communication was based on the findings of the Fitness Check on the internal aviation market that was performed by the EU Commission and was subsequently published in June of 2013. Regarding airline insolvency, the Fitness Check emphasizes the need for proactive engagement of individual national regulatory authorities to lessen the impact on passengers, as well as the strengthening of the licensing oversight for EU Community air carriers under Regulation (EC) 1008/2008[362].

Compared to the EU, the US very little legal legislation entitles consumers to compensation in the event of airline insolvency. Indeed, if US air passengers desire protection against airline insolvency this is usually purchased through a private insurance company. In the most recent case of airline insolvency in the US, the department of Transportation issued an information sheet for consumers that highlighted action that could be taken if a passenger is faced with the cessation of operations by an airline[363]. Although the information sheet is tailored for the public charter operator Southern Sky Air Tours, d/b/a Myrtle Beach Direct Air and Tours, universally called Direct Air, the compensation alternatives are valid across the industry. More specifically, this document points out that 'customers who paid Direct Air by credit card may be entitled to credit from their credit card company under the Fair Credit Billing Act'. However there are no guarantees of this occurring and the problem is compounded by the fact that there is no federal protection for debit card purchases.

Generally, research revealed that air passenger protection against airline insolvency is limited on a global scale. The Working Paper presented at the Worldwide Air Transport Conference (ATCONF) that took place on March 2013 touched upon this issue[364]. The Working Paper stated that 'general bankruptcy laws may also provide some level of limited redress in the event of air carrier insolvency'. It is worth noting that in order for passengers to receive compensation they must file a claim in order to obtain a payment however, the chances of receiving such a payment are often low. That is because passengers are usually only entitled to payment after secured creditors have been reimbursed first. The creditor list could include aircraft lessors, financial institutions, aircraft manufacturers, labour, tax authorities, and insolvency procedure officials such as trustees.

[361] Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions Passenger Protection In The Event Of Airline Insolvency http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52013DC0129

[362] Fitness Check - Internal Aviation Market Date: 06/06/2013 at http://ec.europa.eu/transport/modes/air/internal_market/doc/fitness_check_internal_aviation_market_en_commission_staff_working_document.pdf

[363] US Department of Transportation: Transportation Facts - Information for Consumers Regarding the Cessation of Operations by Southern Sky Air Tours d/b/a Myrtle Beach Direct Air and Tours, Date: 20 March 2012, at http://www.dot.gov/sites/dot.dev/files/docs/Direct_Air_Fact_Sheet.pdf?_sm_au_=i5VwMfk0wPn5w53N

[364] ICAO Information Paper: Effectiveness of Consumer Protection Regulation , at http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-ip001_en.pdf

10.4 Air Passenger Rights Legislation: Recent Developments

10.4.1 Overview of Regulation EC 261/2004

The EU Air Passenger Rights Legislation, - Regulation [EC] 261/2004 – was developed in 2004 and came into effect in February 2005. Setting out a common set of rules on compensation and assistance to air passengers in the event of long flight delays, flight cancellations or denied boarding. Moreover, it defines the entitlements passengers have with regards to compensation and assistance that may be requested in case their flight is delayed, cancelled or they are denied boarding.

The legislation applies to a passenger who:

- Has a confirmed reservation on the flight, and;
- Has arrived in time for check-in as indicated on the ticket or communicated by their carrier, or;
- Has been transferred from the flight for which he/she held a reservation to some other flight, and
- Is departing from an airport located in the territory of an EU Member State, or;
- Is travelling to an EU Member State on an EU Member State -based airline.

Since this legislation has come into force the European Commission has proposed a number of clarifications and consulted key industry stakeholders[365] to gather their views "on the identification of possible shortcomings of the Regulation and their extent. Moreover, the Commission has provided a number of options to improve its application, either via non-legislative measures or via a revision of the Regulation".

The legislation has been in force for the past 8 years. Following the themes arising from the court cases regarding EC 261 as well as the findings of the consultation, the Commission published a set of proposals on the 13 March 2013[366]. This proposal included "a package of measures to ensure that air passengers have new and better rights to information, care and re-routing when they are stranded at the airport, as well as to ensure there will be better complaint procedures and enforcement measures so passengers can actually obtain the rights to which they are entitled".

The proposal refers to three pillars that included a series of new rights on:

- Equality of treatment where the flight was rescheduled less than 2 weeks before its original departure time;
- The correction of spelling mistakes – free of charge - in a passenger's name if requested up to 48 hours before departure;
- Denied boarding on a passenger's return flight on the grounds that they did not take the outbound part of the return ticket;
- Mishandled cabin and checked-in baggage;
- Coordination and clarity on enforcement and sanctioning of passenger rights by national authorities;

[365] EC Passenger Rights - Public consultation on the possible revision of Regulation (EC) No 261/2004 on air passenger rights, at http://ec.europa.eu/transport/themes/passengers/consultations/2012-03-11-apr_en.htm

[366] European Commission - IP/13/219 13/03/2013: Commission proposes new measures to strengthen air passenger rights, at http://europa.eu/rapid/press-release_IP-13-219_en.htm

- The financial cost of some of the obligations imposed by the Regulation (subject to limitations), as this may become disproportionate for the airlines in certain circumstances;
- Three-night limit for providing accommodation to passengers (but no time limit for assistance)
- Exemptions for regional operators in providing accommodation to passengers
- Complaint handling; airlines are forced to provide clear procedures, reply to complaints within set deadlines and resolve disputes with passengers in ad hoc out-of-court complaint handling bodies

European Parliament

The draft revised legislation was voted for by the European Parliament (EP) on 05 February 2014[367] on its first hearing. The EP reviewed the revised EC 261/2004 legislation and the following are some of EP's proposed updates:

- If a passenger misses their connecting flight, the feeder carrier should compensate them if the delay experienced and caused the missed flight was at least 90 minutes later than the scheduled time of arrival and the delay at arrival at destination was more than 5/9/12 hours depending on distance.
- To protect passengers from the case that a carrier goes bankrupt, the EP suggests that carriers develop appropriate guarantee mechanisms (funds or insurance policies) to eliminate the incident of passengers being stranded and ensure the reimbursement of their tickets
- The EP is promoting the empowerment of national authorities to penalise carriers that fail to fulfil passenger rights and also assess carriers' reports on how they help passengers deal with flight delays and cancellations.
- Airlines need to have some sort of presence (own staff or third party) at every airport during their operation hours to provide passengers with information regarding their rights, assist passengers in cases of disruptions and accept complaints.

The EP draft mirrors the Commission's goal to strengthen air passenger rights but is also suggesting new measures or clarification points that aim to balance airlines' and passengers' interests but also recognise the need for flexibility. A final agreement is unlikely to be reached before the end of 2014 "due to the highly controversial nature of this dossier"[368], but solid progress is being achieved towards that direction by the Council of the European Union, as seen in the meetings held in June 2014[369]. Major outstanding issues include thresholds for compensation, compensation for connecting flights and airline liability regarding cabin baggage.

10.4.2 Passenger Protection Regulation & Policy Development within the EU/ENP

IATA confirms that more than 50 countries, including Brazil, India, Pakistan, Venezuela, Thailand and Turkey, now have some sort of passenger rights legislation in place, the majority of which was developed in the last seven years[370]. This is great news for the industry and in principle it shows signs of realisation by

[367] European Parliament News: Parliament pushes for enforceable air passenger rights, at http://www.europarl.europa.eu/news/en/news-room/content/20140203IPR34618/html/Parliament-pushes-for-enforceable-air-passenger-rights

[368] European Parliament vote on EU Regulation 261_2004 on Air Passenger Rights.pdf

[369] 3318th Council meeting on Transport, Telecommunication and Energy, Press Release on 5th and 6th if June 2015, at http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/trans/143114.pdf

[370] IATA Feature: Signs of Confusion, at http://www.iata.org/publications/airlines-international/april-2013/Pages/passenger-rights.aspx

governments across the globe of a requirement to adopt global policy issues and regulatory initiatives. On the other hand, the lack of a coordinated approach has resulted in the implementation of patchwork rulings that, according to IATA, increase complexity and cost for the industry, hinder growth and connectivity, which is also impacting passenger protection[371].

The EU has been working towards the establishment of a common aviation area through the European Neighbourhood Policy (ENP) while aiming to strengthen its relations with countries to the east and south of the European territory. This is achieved through multi/bilateral agreements in the form of an Action Plan. Amongst other things, the EU is working towards implementing a Common Aviation Area that will further integrate the aviation market of the partner countries. See Figure 10.1 for a visual representation of the current ENP countries and external relations.

The countries that to date are covered under this area include Algeria, Morocco, Egypt, Israel, Jordan, Lebanon, Libya, the Palestinian Authority, Syria, Tunisia in the South and Armenia, Azerbaijan and Belarus, Georgia, Moldova, Ukraine in the East, while Russia has a 'Common Spaces' agreement instead of participating in the ENP participation.

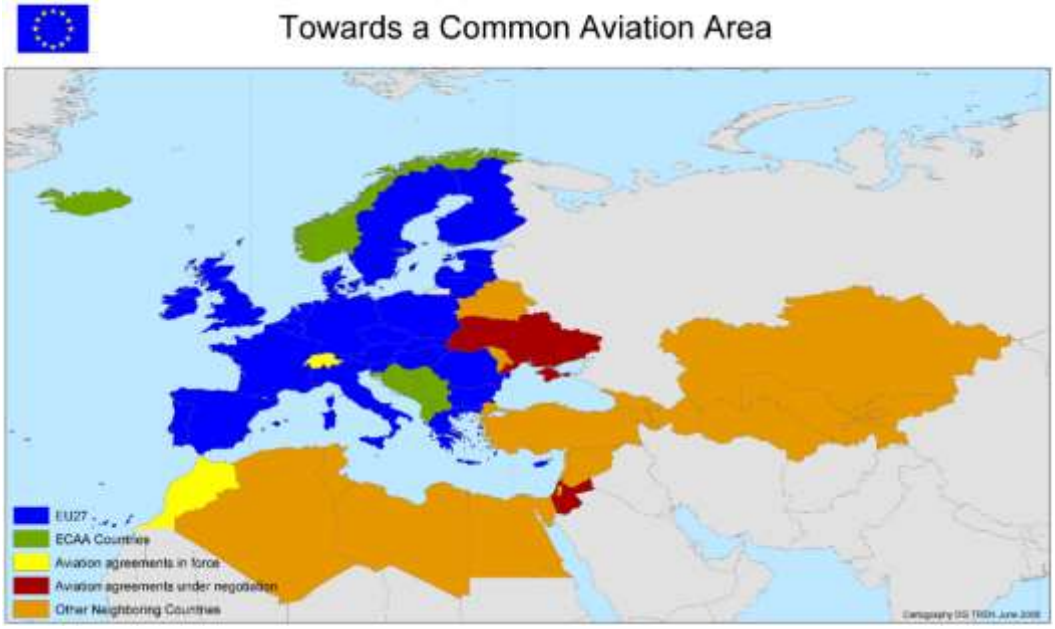
Figure 10.2 below provides a visual representation of the ENP countries, as well as those countries with which negotiations are still work-in-progress, or that are shortlisted for agreement negotiations.

Figure 10.1: ENP Partner Countries & External Relations

Source: European External Action Service (http://europa.eu/rapid/press-release_IP-11-1177_en.htm)

[371] IATA 2013 Annual Review, at http://www.iata.org/about/Documents/iata-annual-review-2013-en.pdf

Figure 10.2: Euro-Mediterranean Common Aviation Area Map



Source: EC Common Aviation Area Map

This drives towards achieving a common set of aviation approaches and legislation under the Common Aviation area, ultimately delivering benefits for passengers and airlines alike. Under this umbrella agreement, the European Commission has finalised, engaged or is about to engage on aviation-related agreements with neighbouring countries within the greater European / Mediterranean region, and other countries across the globe such as Brazil, the Gulf, and the US.

The common goal amongst most if not all of these air transport agreements is convergence on a range of regulatory areas, including consumer protection. This aims at ensuring a level playing field for fair competition between EU and Brazilian airlines and equal rights and opportunities for all EU carriers.

Amongst other things, this agreement aims to establish an alignment of aviation rules and regulations between the parties involved, covering areas such as safety, competition and consumer protection.

In the following sub-sections various developments, in the form of bilateral agreements, air service agreements and legislation updates reported across the globe will be examined.

Euro - Med Aviation Agreements

The countries that to date have agreed to or have already established foundations for building a multilateral framework of agreements under the Euro-Med project are the 15 EU Member States as well as Mediterranean and Balkan countries such as Algeria, Georgia and Moldova, Egypt, Israel, Jordan, Lebanon, Malta, Morocco, the Palestinian Authority, Syria, Tunisia and Turkey. Negotiations are ongoing with Ukraine and Lebanon, whilst Azerbaijan and Tunisia are also in the pipeline.

The primary objective of these agreements is the development of a Common Aviation Area through the formation of agreements between the EU and the participating countries-partners in terms of cooperation in aviation and the establishment of an open and secure aviation market. The first stage of the agreement involves the signature of comprehensive air service agreements; Morocco, Jordan and Israel are examples

of the Mediterranean countries that have already signed such agreements. An update on progress made in 2013 for these countries is included below.

The aviation legislation and standards with regards to Consumer Protection are specified in a sub-section of Annex III of these agreements, and it ensures that non-EU carriers of the participating countries that are operating in the EU also comply with minimum rules of passenger protection. Israel, Jordan, Ukraine and Georgia are some of the countries with such an agreement in place, in force or pending agreement. The list of Directives related to air travellers is included below.

- No 90/314 Council Directive 90/314/EEC of 13 June 1990 on package travel, package holidays and package tours; Applicable provisions: Articles 1 to 10;
- No 93/13 Council Directive 93/13/EEC of 5 April 1993 on unfair terms in consumer contracts; Applicable provisions: Articles 1 to 10 and Annex;
- No 95/46 Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data; Applicable provisions: Articles 1 to 34;
- No 2027/97 Council Regulation (EC) No 2027/97 of 9 October 1997 on air carrier liability in the event of accidents, as amended by:
- Regulation (EC) No 889/2002 of the European Parliament and of the Council of 13 May 2002 amending Council Regulation (EC) No 2027/97; Applicable provisions: Articles 1 to 8;
- No 261/2004 Regulation (EC) No 261/2004 of the European Parliament and of the Council of 11 February 2004 establishing common rules on compensation and assistance to passengers in the event of denied boarding and of cancellation or long delay of flights, and repealing Regulation (EEC) No 295/91; Applicable provisions: Articles 1 to 17;
- And, No 1107/2006 Regulation (EC) No 1107/2006 of the European Parliament and of the Council of 5 July 2006 concerning the rights of disabled persons and persons with reduced mobility when travelling by air; Applicable provisions: Articles 1 to 17, Annexes I and II.

As part of the process, regular Joint Committee meetings take place, where designated Committee delegates from both Parties follow-up regulatory developments in the parties to the agreements to ensure that the Agreement is properly implemented and administered. In Jordan's case for instance, the designated Committee for this Agreement will review Jordan's legislation reforms and assess their compliance with the respective EC aviation agreement. The first Joint Committee between the EU and Jordan took place in Amman on 10 January 2013, where Jordan stated it had almost completed its implementation of the EU *acquis* required by Annex III of the Agreement[372].

In the following section we review the 2013 Euro-Med developments.

Israel

The Euro-Mediterranean Aviation Agreement between the EU and Israel was initialled on 30 July 2012. After a final round of negotiations, the European Union and the state of Israel signed a comprehensive air transport Agreement on the 10 June 2013. This Agreement which will gradually provide growth for both markets through the establishment of common rules and has the potential to create economic and other

[372] Official Journal of the European Union L 334/3: EURO-MEDITERRANEAN AVIATION AGREEMENT, at http://ec.europa.eu/transport/modes/air/international_aviation/country_index/doc/asa_eu_jordan_.pdf

benefits for passengers and the industry as a whole[373]. As a result of this agreement, Israel will implement regulatory requirements and standards equivalent to EU aviation rules including the passenger rights legislation currently in place in the EU.

Despite the opposition (expressed in the form of a letter in March 2013) by 23 Members of the European Parliament for the suspension of the EU-Israel Association Agreement - who claimed the breach of Israel's commitments under article 2 of the Agreement due to violation of human rights and democratic principles by the Israeli government documented by the United and international human rights organizations[374] - the EU and Israel are committed towards establishing a partnership that will provide integration of passenger rights legislation

Prior to finalisation of the agreement, the Israeli government issued the Aviation Services Law (Compensation and Assistance for Flight Cancellation or Change of Conditions), under which section 5772-2012 will regulate all flights operated to and from Israel and apply to Israeli and foreign carriers. Following this carriers such as British Airways[375] and Delta Air Lines[376] have released notices regarding passenger rights on "Compensation and Assistance Benefits for Flight Cancellations, Delays, Denied Boarding or Change of Conditions" for passengers travelling on flights from/to Israel, on a confirmed reservation on a flight operated by the named carrier, and fully checked-in by the time indicated on the ticket.

Jordan

On 15 December 2010 a Euro-Mediterranean Aviation Agreement was signed between the European Union and Jordan[377]. The aim of this Agreement is to establish a closer and harmonious cooperation between the European Communities and Member States, and the Hashemite Kingdom of Jordan. This is an extension of the European Neighbourhood Policy (ENP) with Jordan, and indicates that the parties involved are building stronger ties, and are making progress, towards the formation of integrated aviation systems and regulation, amongst other things. The framework on which this will be built and the international standards and EU best practices that the State of Jordan needs to adhere to are clearly defined in the Agreement Protocols (Annex III).

Consumer protection is one of the minimum legislations to be delivered by Jordan as part of the Agreement and one of the convergence points with EC practises. The EC 2013 progress report was issued on 27 March 2014 and related to the implementation of the ENP by Jordan[378], it was stated that no substantial regulatory changes in passenger protection have been made. Previous developments though indicate a slightly different story.

---

[373] EC Press Release Aviation: EU and Israel sign agreement, at http://ec.europa.eu/transport/modes/air/international_aviation/country_index/doc/ip-13-519_-_en.pdf

[374] http://www.eccpalestine.org/23-meps-call-for-suspention-of-eu-israel-association-agreement/

[375] http://www.britishairways.com/cms/global/pdfs/Travel_classes/Israel-Aviation-Services-Law_Aug2012.pdf

[376] http://www.delta.com/content/dam/delta-www/pdfs/legal/passenger_rights_israel.pdf

[377] European Union No. 2 (2011): Euro-Mediterranean Aviation Agreement, at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/238281/8054.pdf

[378] EC Joint Staff Working Document: Implementation of the European Neighbourhood Policy in Jordan Progress in 2013 and recommendations for action, at http://www.parlament.gv.at/PAKT/EU/XXV/EU/01/89/EU_18955/imfname_10452994.pdf

As part of its legislation reform, Jordan in the first half of 2013 a set of draft civil aviation economic regulations[379], of which Part 209[380] and Part 211[381] cover passenger protection and passengers with reduced mobility (PRM) regulations, respectively. The draft Part 209 legislation covers issues such a denied boarding, flight cancellations and delays and airline insolvency from an airlines' and tour operators' point of view, as well as right to compensation and right to care. These rules apply to both domestic and international carriers, and the Enforcement Body responsible for the implementation of this Regulation is the Civil Aviation Regulatory Commission (CARC).

The draft legislation does not in its current form indicate the different levels of compensation that passengers have the right to claim in the event of denied boarding or flight cancellation. Once the law is amended to incorporate these, the CARC Commission will have to approve them so that they can come into force.

Despite the challenges faced by Jordan due to the political instability in Syria (primarily the influx of refugees) the country has made evident progress towards regulatory convergence with the EU Member States and increased market access, as per the ENP Action Plan principles. Jordan is gradually developing a passenger protection mechanism in case of disruptions to their air journey, in a way that it is homogenous to that of the EU.

Ukraine

As of the 28 November 2013[382], the EU and Ukraine initialled an Open Skies Agreement (otherwise called as Common Aviation Area Agreement) with which Ukraine is integrated into the EU internal market through the signing of a bilateral Air Services Agreement (ASA) between the two parties. This ASA ensures, amongst other things, that a set of common and reliable aviation standards are set with regards to passenger rights protection[383]. The signing of the Open Skies agreement has yet to be completed, as it was postponed due to the positions of Spain and the UK regarding the article referring to the territory over Gibraltar[384].

Through the Air Code of Ukraine and the Order of the Ministry of Infrastructure of Ukraine № 735, the State of Ukraine does currently make some sort of provision for passenger rights; however the State will have to align its legislation with the applicable EU aviation standards and requirements in passenger protection.

[379] 9th Euromed Aviation Working Group: Presentation by the Beneficiary countries of their progress on their Action plan; Partner Country: Jordan, at http://www.euromedtransport.eu/Fr/image.php?id=2912

[380] Proposed Regulation of JCAR: Part 209 Consumer Protection, at http://carc.gov.jo/images/filemanager/042611part%20209.doc-web.pdf

[381] Proposed Regulation of JCAR: Part 211 Passenger with Reduced Mobility (PRM), at http://carc.gov.jo/images/filemanager/032748211-final.pdf

[382] European Commission - MEMO/13/1065 28/11/2013 on EU and Ukraine for a Common Aviation Area Agreement, at http://europa.eu/rapid/press-release_MEMO-13-1065_en.htm

[383] European Commission - IP/13/1181 28/11/2013 on Aviation: EU and Ukraine skies to join forces, at http://europa.eu/rapid/press-release_IP-13-1181_en.htm

[384] Meeting of Ukraine PM with Spanish PM, Date:08/09/2014, at http://en.cfts.org.ua/news/poroshenko_calls_for_open_skies_agreement_between_ukraine_and_eu_to_be_signed_as_soon_as_possible

Morocco

In mid-December 2006, the EU and the Kingdom of Morocco signed the first Euro-Mediterranean bilateral agreement that aimed at aligning aviation legislation between the two parties, eventually leading to transport market opening[385].

Morocco has successfully undertaken reforms to its legislation to achieve convergence towards the aviation EU *acquis*. Moreover, negotiations for an open skies agreement with the EU started in November 2012 and are still on-going.

The notable benefits of the Agreement to date are market liberalisation, a decline in fares and improved traffic levels across the two markets; however no progress has been made on passenger protection legislation, notably due to changes within the national government and parliament.

Tunisia

On 9 December 2008, the EC received authorisation from the Council of the European Union to initiate negotiations with Tunisia on a Euro-Mediterranean Aviation Agreement.

Four and a half years later, on 27 June 2013, the first round of negotiations took place in Tunis with the first tier of discussions focusing on homogenising all of Tunisia's ASA with individuals EU States into a single deal.

Negotiations between the two parties are on-going, and on 15 April 2014, amongst other things, the Protocol on Framework Agreement on participation of Tunisia in EU programmes was initialled and the EU-Tunisia Action Plan was endorsed[386]. It could be said that this signifies that further steps are being made towards the convergence of laws and practises in a number of areas such as human rights and democratic principles.

This was cemented during the 10th EU-Tunisia Association Council meeting, held on the 14 April 2014 in Tunis, when the 2014-2017 Action Plan was agreed between the two sides[387]. The Action Plan represents a framework of reforms to be implemented by Tunisia; it sets the basis of integration of the two parties and it supports the establishment of agreements. This will consequently lead to a common aviation agreement and a comprehensive set of rules in convergence with the EU legislation on matters including passenger protection.

Georgia

In early December 2008, the EU and Georgia signed the Common Aviation Area Agreement with the aim to open and integrate the respective air transport markets, strengthen cooperation and offer new opportunities for consumers and operators. And two months later, in late February 2008[388], further

[385] Summary of Treaty, at http://ec.europa.eu/world/agreements/prepareCreateTreatiesWorkspace/treatiesGeneralData.do?step=0&redirect=true&treatyId=3741

[386] More steps to deepen cooperation and support between EU and Tunisia, at http://www.balkans.com/open-news.php?uniquenumber=191886

[387] Tunisia: EU-Tunisia Association Council - Agreement On 2014-2017 Action Plan, at http://allafrica.com/stories/201404151597.html

[388] Official Journal of the European Union L 134/24 AGREEMENT between the European Community and the government of Georgia on certain aspects of air services, at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:134:0024:0031:EN:PDF

progress was made with a "horizontal" air transport agreement signed between the two parties on certain aspects of air services that may be included in bilateral air service agreements

And although a bilateral has not yet been signed – except for the Partnership and Cooperation Agreement Protocol of 12 December 2012, the two parties signed and provisionally applied the Common Aviation Area Agreement in 02 December 2010[389].

10.4.3 Passenger Protection Regulation & Policy Development outside the EU/ENP

Despite some confusion, Regulation EU261 is being used as a model for passenger rights legislation in other parts of the world. These include countries such as Brazil, Israel and the Philippines. However, this does not imply that the passenger rights legislation in these countries has been developed or reformed in a uniform way to that developed by the EC.

Middle East

Regarding the Gulf carriers, the standards applied in case of service disruption are determined solely by the contract of carriage for each carrier, as reflected in the carriage documentation provided. However, a formally defined framework of aviation passenger protection legislation is not available in the public domain for individual Middle Eastern countries or for the entire region. This is evident when one examines the Conditions of Carriage documentation of two of the largest Middle Eastern carriers (Qatar Airways[390], Emirates[391]). Under both documentation papers reference is made that the carriers' conditions comply with the Warsaw and the Montreal Convention Agreements. Reference is also made to EC Regulation 261/2004 and its applicability to passengers who board a flight in an EU country, directed to their rights in the case of denied boarding, cancellation, or long delay of flights. Also, reference is made to the US Department of Transport rulings with regards to passenger compensation entitlement under circumstances of denied boarding.

Notable exception to this absence of passenger protection rights are the recently implemented Saudi Arabia regulations. The Kingdom of Saudi Arabia, through the Civil Aviation General Authority, issued regulations for the protection of consumers' interests, including those with special needs, in 2010, which have been in effect since 2011. Consumers did appreciate the promulgation of these regulations because they trusted the regulating body of the air transport industry and its efforts to safeguard their rights. That body received observations from service providers and work is underway to update the regulations in consideration of those observations[392].

[389] Official Journal of the European Union L 8/3, at http://ec.europa.eu/world/agreements/prepareCreateTreatiesWorkspace/treatiesGeneralData.do?step=0&redirect=true&treatyId=10242

[390] Qatar Airways Conditions of Carriage (last updated 23 April 2014), at http://www.qatarairways.com/global/en/conditions-of-carriage.page

[391] Emirates Conditions of Carriage for Passengers and Baggage (published 10 May 2012), at http://cdn.ek.aero/uk/english/images/english%20final10may2012%20%20(3)_tcm275-194795.pdf

[392] ICAO ATCONF 6th meeting, at http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-wp043_en.pdf

South East Asia - The Philippines

On 11 December 2012, the Air Passenger Bill of Rights[393] and approved and jointly issued by the Philippine Department of Transport and Communication (DOTC) and the Department of Trade & Industry (DTI) and ordered its immediate effect of the Bill (10 days after its publication). The three main principles of the Air Passenger Rights are: (1) right to be provided with accurate information before purchase, (2) right to receive the full value of the service purchased, and (3) right to compensation. Below is the high-level of list of the "Eight Basic Consumer Rights"[394]:

- The right to be processed for check-in;
- The right to sufficient processing time;
- The right to board aircraft for the purpose of flight;
- Right to compensation and amenities in case of cancellation of flight;
- Right to compensation and amenities in case of flight delay and exemption thereto;
- Right to compensation and amenities in case for delayed, lost or damaged baggage;
- Right to compensation and amenities in case of death or bodily injury of a passenger;
- And, right to immediate payment of compensation.

These are applicable to both domestic and international flights. The first three rights portrayed in the Bill could be characterised as principles that Philippine carriers on domestic and international flights and foreign carriers for all flights departing from the Philippines should adhere to.

Then in July 2013, the First Regular Session of the Sixteenth Congress[395] of the national legislature of the Republic of the Philippines, composed of the Senate and House of Representatives was held in the Philippines. The following Bills (Acts), associated to aviation and more specifically the protection of passenger rights protection through policies and legislation and their alignment were approved during that Session:

- House Bill No. 23: An Act Ensuring the Rights of Airline Passengers by Providing Standards for Airline Carrier Services396;
- And, House Bill No. 36: An Act Institutionalising the Air Passengers Fairness Act of 2013397.
- And, House Bill No. 315: An Act Setting the Direction of and Parameters for the Development of and Regulation of the Transportation System in the Philippines and for Other Purposes.

Bill No. 23, implemented at the start of 2013, applies to air carriers providing flights within or from the territory of the Philippines, Philippine-based carriers, charter flights and foreign carriers that operate from

[393] Joint DOTC-DTI Administrative Order NO.01 on Providing a Bill of Rights for Air Passengers and Carrier Obligations, at http://dti.gov.ph/uploads/DownloadableForms/DOTC%20DTI%20JAO%20No%201%20s%202012%20-%20Air%20Passenger%20Bill%20of%20Rights_10%20December%202012.pdf

[394] DTI Philippines Air Passenger Rights, at http://www.dti.gov.ph/dti/index.php?p=829

[395] http://www.congress.gov.ph/members/

[396] Republic of the Philippines House of Representatives House Bill No. 23: An Act Ensuring the Rights of Airline Passengers by Providing Standards for Airline Carrier Services, at http://www.congress.gov.ph/download/basic_16/HB00023.pdf

[397] Republic of the Philippines House of Representatives House Bill No. 36: An Act Institutionalising the Air Passengers Fairness Act of 2013, at http://www.congress.gov.ph/download/basic_16/HB00036.pdf

the territory of the Philippines and under Section 3 it sets the standards that these carriers should perform. These are prescriptive on how airlines should handle passenger complaints, the airlines' obligations in terms of elements such as diversions, delays and cancellations, fares, schedules and itineraries, baggage and passenger rights notification. The Bill however does state the penalty a carrier would have to pay to the passenger affected if it violates the provisions of this Act (no less than 10 thousand and no more than 30 thousand Pesos, depending on the severity of the cause). Carriers that create serious or repeated violations of the Act could pay the penalty of having their route licence (or certificate of public convenience for domestic routes) suspended or revoked. Reviewing both the Passenger Bill of Rights Act and Bill No. 23, it is obvious that they are both one-sided acts as they fail to raise passenger awareness on the process of making a complaint.

Bill No. 36, also implemented in January 2013, provides an explicit overview of the passenger rights and of the airline obligations. Through this Act, a Congressional Oversight Committee is designated to act as an enforcement body for the next 5 year period, whose duties include the monitoring of the proper implementation of this Act. Similar to Bill No. 23, this act has been established to provide a framework under which airlines flying from/to the Philippines should present in their conditions or carriage and cater for. It does not educate passengers on the procedure or the hierarchy of actions they should take in order to file a complaint.

Although not included in the list above, House Bill No. 315[398] is worth noting. Through this Bill the Congress of the Philippines is recognising the need to "clearly lay down a comprehensive transportation policy that takes into account the varied and complex areas in the transportation industry" and the lack of "a seamless, integrated and efficient transport system… due to the lack of enabling or enforced bodies". This Bill addresses the requirement of a sound transportation policy that is applicable to and in the interest of all industry stakeholders.

People's Republic of China

In the People's Republic of China the Transportation Division and Consumer Affairs Centre of Civil Aviation Administration of China (CAAC) is the Chinese aviation authority acting as an Enforcement Body with regards to handling consumer complaints and providing feedback to the relevant aviation entities and investigating major cases of consumer complaints, amongst other things.

Although it has proven challenging to locate the actual legislation for the protection of air passenger rights in the Republic, the CAAC website is indicating that the State has a framework in place to safeguard passengers' rights. The Centre has a Passenger Voice section on their website which allows users to complete a 'praise' form or dial a designated number for commendation of an airline's or airport's services.

More importantly, there is a link to the Policies and Regulations adopted by the country to protect the passenger's interest in cases of disruption. Although no reference is made to which laws these are applicable to, the General Knowledge of Flight Delays document informs passengers of the reasons and classification of disruptions, who can take the blame when the aircraft is late, and provides useful contact numbers with regards to rights protection and complaints. Consequently passengers are aware of the airline's and airport's obligations, as well as their rights for care, shelter, information, etc. when their flight is delayed or cancelled.

[398] Republic of the Philippines House of Representatives House Bill No. 315: An Act Setting the Direction of and Parameters for the Development of and Regulation of the Transportation System in the Philippines and for Other Purposes

Under the Consumer Guide to Air Travel guidance document the CAAC provides some generic direction on international standards such as passenger allowance with regards to liquids and gels legislation and passenger reporting times for their flight. This is thus not directly linked to passenger rights with regards to assistance, refunds, or the requirement for information. However, reference is made to the Civil Aviation Law of the People's Republic of China legislation, first published in 1995; however no indications exist of a revision of the law since then. This Law is generic as it includes articles that define the operational requirements, conditions and provisions that a carrier and an airport for example should meet in order to be airworthy or open to traffic. There is no apparent consumer rights protection legislation reflected in the Law. Chapter IX Section 3 relates to the Liability of the Carrier with regards to baggage handling, passenger death, as well as the limit of liability. In other Articles passengers are informed to provide their complaint in writing, and that the complaint cut-off point is 2 years. Moreover, direct and clear reference to rules and limitations relating to the Warsaw Convention, the Montreal Convention and other universal standards are not evident in the Civil Aviation Law, however Chapter XIV does indicate that in foreign-related matters the applicable law will be that of an international treaty, unless the People's Republic of China has declared reservation to the provisions of this treaty. Again here, the coverage of consumer protection rights is limited.

India

The Directorate General of Civil Aviation (DGCA) is the regulatory body of the Ministry of Civil Aviation in India that is responsible for the regulation of air transport services to/from/within India and for enforcement of civil air regulations, air safety and airworthiness standards, refereed to at Civil Aviation Requirements (CAR).

With regards to the protection of passenger rights, the DGCA issued certain rights under CAR Section 3 – Air Transport. These requirements concentrate only on regulations for the carriage of passengers with reduced mobility[399], airline ticket refunds[400], and facilities to be provided to passengers by airlines in case of denied boarding, flight cancellations or delays[401].

With regards to PRMs, the CAR sets the airline-specific and the airport operator requirements, including training requirements for both entities. Resolution guidelines provided however are very academic and generic. This ruling was revised in early 2014, and it is the only recent update of DGCA legislation mechanisms for the protection of passenger rights in India.

Similarly for ticket refunds, the scheduled and non-scheduled airlines' minimum requirements are prescribed and the compensation bandings are defined, however the requirements are theoretical and there is no guidance on escalation steps or mention of the designated enforcement body that would facilitate a resolution in case the airline is not compliant. This decision has been active since 2008, however no amendments have been implemented since to adhere to or to align against revisions to the applicable passenger regulation standards.

Finally, and in response to the increased 'necessity' for Governments to protect passenger rights in case of denied boarding, flight cancellations and delays, the DGCA issued in 2010 a revised ruling on this matter.

[399] Civil Aviation Requirements Section 3 - Air Transport Series M Part I Issue III, Dated 28 February 2014 F. No. 23-5/2010-AED, at http://dgca.nic.in/cars/d3m-m1.pdf

[400] Civil Aviation Requirements Section 3 - Air Transport Series M Part II Issue I, Dated 22 May 2008, at, http://dgca.nic.in/cars/D3M-M2.pdf

[401] Civil Aviation Requirements Section 3 - Air Transport Series M Part IV Issue I, Dated 06 August 2010, at http://dgca.nic.in/cars/D3M-M4.pdf

Australia

Australia has no passenger rights legislation as such that protects passengers from delayed or cancelled services. On 01 January 2011 however, the Australian Consumer Law (ACL) came into force[402], administered by the Australian Competition and Consumer Commission (ACCC) and replaced consumer protection provisions in both national, State and territorial levels and introduced a coherent and generic approach across various industries, including a coherent but basic approach on consumer protection for air passengers.

The ACL is the main outcome of the reform of the Council of Australian Governments' (COAG's) consumer law, whose objectives are "to strengthen the effectiveness and responsiveness of consumer policy and to promote trans-Tasman harmonisation and coordination as appropriate, CAANZ has engaged in policy coordination and development, enforcement cooperation and information sharing, and shared compliance and national education initiatives"[403]. It covers matters such as misleading and deceptive conduct, unfair contract terms, unfair practices and consumer guarantees, and it is enforced by Government Bodies across national, local state and territorial levels.

In July 2012, the Australian government, in association with the five major domestic carriers, Qantas, Virgin Australia, Jetstar, Regional Express and Tiger, established the Airline Customer Advocate Body. This Body provides a free and independent facilitation service to "eligible customers of major Australian airlines" regarding complaints on airline services that the airlines are unable to resolve directly. The target time for resolving each case is 20 working days. Once a complaint has been filed, it is assessed against the relevant carrier's Customer Charter[404], which is effectively the carrier's Conditions of Carriage document that refers to cancellation/refund requests, flight delay or cancellation, fees or charges, and terms and conditions or carriage. This document therefore outlines the carrier's service and refund obligations and gives brief guidance on the complaints handling procedure to be followed by a passenger, as well as key contact details for the Airline Customer Advocate Body in case the passenger is unsatisfied with the airline's response to their complaint or the Participant Airline's review of the airline[405].

Given the way the passenger protection mechanism is established, it is fair to say that the ACL is promoting highly the concept of passenger awareness and education on entitlements and restrictions (e.g. time limit to raise a claim) and the dealing of a complaint directly with the airline entity involved.

The Australian system therefore passes on the burden to the passenger and airline to which a complaint is for empowering them to resolve the incident. The ACL's role is therefore that of an ombudsman.

Although Australia does not have a formally legislated bill of rights for passengers, its existing law meets the criteria of a coordinated and national set of principles communicated to passengers in a clear and concise manner, through the Charter.

The full impact of the Charter and the Advocate facilitation work is not yet known as a 2013 year-on-year comparison of the top five complaint issues is not possible, since the Advocate was only established in the

[402] http://www.consumerlaw.gov.au/content/Content.aspx?doc=ACL_travel.htm

[403] COAG Legislative and Governance Forum on Consumer Affairs Consumer Affairs Australia New Zealand STRATEGIC AGENDA 2013-2015, at http://www.consumerlaw.gov.au/content/mcca/downloads/CAF_strategic_agenda_20130515.pdf

[404] http://www.airlinecustomeradvocate.com.au/General/AirlinesCustomerCharter.aspx

[405] Virgin Australia Guest Charter (Customer Service Plan), at http://www.virginaustralia.com/au/en/experience/service-experience/customer-service-plan/

second half of 2012. The top complaint issues received by the Advocate and corresponding percentages of Eligible complaints received for the period Jan-Dec 2013[406] are:

- Cancellation / Refund Request: 32%;
- Flight delay or Cancellation: 17%;
- Fees or Charges: 12%;
- Terms and Conditions: 12%;
- And airport Customer Services: 5%.

Latin America / the Caribbean

The adoption of a globally harmonised approach is not currently echoed in the Latin American / Caribbean region, as the governments in these countries have to date developed their own regulatory approaches towards protecting passengers in the events of cancellations and delays, thus failing to adopt and adhere to universal industry standards and recommended practises.

Although information is hard to find on passenger rights for that market, the legislation approach adopted in the region is amongst the most prescriptive and the proposed compensation by airlines is amongst the highest in the world. In Mexico, compensation for flight cancellations can be as high as 300% of the ticket price, with a circa EUR 1,100 (USD 1,500) compensation for extended delays on long-haul flights. In Peru, passengers are allowed by law to change reservations for any reason and without penalties, a highly costly element for airlines that has to be recouped[407]. In the first month of 2014, the members of the Chilean parliament approved a new passenger rights law; however this still pends approval by the Senate. The adoption of a passenger rights law is a major step forward for Chile, however the proposed legislation allows for passengers to claim for cancellation / delay compensation regardless of whether the airline caused the delay.

Brazil

The negotiations for an aviation agreement between the EU and Brazil for the signing of a comprehensive air transport agreement resumed on 24 January 2013, during the EU-Brazil Summit[408]. The agreement was originally initialled on 14 March 2011 and a review of certain provisions agreed during the negotiations stage was later requested by the State of Brazil.

The next summit is scheduled on 27 February 2014 when it is anticipated the agreement will be finalised with a focus on (1) economic growth and job creation, (2) effective cooperation on key foreign and humanitarian policy issues, and (3) partnership on global challenges such as sustainable development, climate change, environment, energy, human rights and international cyber policy.

[406] Airline Customer Advocate 2013 Annual Report, at http://www.airlinecustomeradvocate.com.au/_lib/Docs/AnnualReport/Annual_Report_2013.pdf?_sm_au_=i5V0PMs62V0VqQw6

[407] Remarks of Tony Tyler (IATA) at the Wings of Change Conference, Santiago, at http://www.traveldailynews.com/columns/article/51057/remarks-of-tony-tyler-iata

[408] Council of the European Union 7069/13: EU-Brazil comprehensive air transport agreement – Information from the Commission, at http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%207069%202013%20INIT

No conclusions have been yet reached on the EU-Brazil Air Transport Agreement, with negotiations still on-going. However, on a joint statement post the Summit, the leaders of both parties confirmed that they are working together to achieve the conclusion of the negotiations as soon as possible[409].

In contrast to other Latin American countries, ANAC the National Civil Aviation Agency of Brazil, amongst other things, acts as the regulatory agency when passengers' rights are not fulfilled by an airline in the case of flight delays, cancellations, or denied boarding. ANAC, through the Passenger Guide[410], it informs passengers of their rights in cases of delay, cancellation or non-boarding, citing Decree No. 6932 of 11 August 2009.

United States of America

Passenger protection in the event of Tarmac delays and non-discrimination of the basis of disability are the two areas where developments were considered or made in 2013, by the US DOT.

In the first quarter of 2013, tarmac delays increased across the US, due to employee furloughs imposed by the Federal Aviation Administration (FAA) as part of government-wide spending cuts. Citing "substantial delay and disruption to air travel that will occur at U.S. airports from the FAA decision to implement daily ground delays and reduce air traffic control personnel", two airline industry associations, Airlines for America (A4A) and the Regional Airline Association (RAA), requested the temporary exemption from tarmac delays for 90 days or until the furloughs end[411]. As a response to this, on 22 April 2013, the DOT issued a memorandum stating that they are considering the request for moratorium of the two associations, inviting parties with an interest on the matter to submit their view to the docket by the 26 April 2013[412]. The furloughs were then suspended by the FAA a few days later, with air traffic control returning back to normal operations with no further actions on the moratorium request published.

With regards to DOT regulations concerning air traveller non-discrimination on the basis of reduced mobility (14 C.F.R. Part 382), the DOT issued in 2013 a new set of rules aiming to "ensure that passengers with disabilities have equal access to the same air travel-related information and services that are available to passengers without disabilities through airline Web sites and airport kiosks".

The DOT has summarised in the table below the major requirements of this regulatory amendment[413]. The rule is effective since 12 December 2013[414]. These are broken down in two areas: web-site accessibility and automated airport kiosk accessibility. Amongst other things, the new rulings require all US-based and

[409] Council of the European Union 6930/14 - 7th EU-Brazil Summit Brussels, 24 February 2014 Joint Statement, at http://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/en/ec/141145.pdf

[410] Council of the European Union 6930/14 - 7th EU-Brazil Summit Brussels, 24 February 2014 Joint Statement, at http://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/en/ec/141145.pdf0

[411] Motion of Airlines for America (A4A) and Regional Airlines Association (RAA) for a temporary exemption from 14 C.F.R. § 259.4, Docket DOT-OST-2013, Date: 19 April 2013, at http://skift.com/wp-content/uploads/2013/04/Motion_of_Airlines_for_America_and_Regional_Airline_Association_for_a_Temporary_Exemption_from_14_C_F_R_Section_259_4-1.pdf

[412] DOT Reviewing Request for Moratorium of Tarmac Delay Rule, DOT 36-13, Monday, April 22, 2013, at http://www.dot.gov/briefing-room/dot-reviewing-request-moratorium-tarmac-delay-rule

[413] Non-discrimination on the Basis of Disability in Air Travel: Accessibility of Web Sites and Automated Kiosks at U.S. Airports, BILLING CODE 4910-9X-P, at http://www.dot.gov/sites/dot.dev/files/docs/ACAA%20Kiosk%20and%20Web%20Site%20Final%20Rule%20October%2023%202013%20original%20signed.pdf

[414] Federal Register / Vol. 78, No. 218 / Tuesday, November 12, 2013 / Rules and Regulations, at http://www.dot.gov/sites/dot.gov/files/docs/Kiosk-website-FR-final%20rule.pdf

foreign carriers with websites marketing air transportation to US consumers for travel within, to or from the United States within a two-year window to make sections of their web pages that contain core travel information and services compliant with the widely accepted Website Content Accessibility Guidelines (WCAG), and a three-year window to make all of their web pages compliant[415]. Requirements for usability testing and the provision of equivalent service to PRMs who cannot use their Web sites are also requirements set by the DOT.

The DOT rule also includes amendments to the automated kiosks at US airports that offer services such as printing boarding passes and baggage tags; at least 25% of all kiosks per airport location must be accessible to PRMs within a 10 year horizon. Equivalent service upon request PRMs who cannot readily use their automated airport kiosks and priority access are also other rulings listed by the DOT.

Table 10.3: Non-discrimination on the Basis of Disability in Air Travel: Accessibility of Web Sites and Automated Kiosks at U.S. Airports

Summary of Regulatory Amendment Requirements	
Website Accessibility	
Scope/ Coverage	• Requires U.S. and foreign carriers that operate at least one aircraft having a seating capacity of more than 60 passengers, and own or control a primary Web site that markets air transportation to consumers in the United States to ensure that public-facing pages on their primary Web site are accessible to individuals with disabilities. • Requires ticket agents that are not small businesses to disclose and offer Web-based fares to passengers who indicate that they are unable to use an agent's Web site due to a disability.
Web Site Accessibility Standard	• Requires carriers to ensure that Web pages on their primary Web sites associated with core travel information and services conform to all Level AA success criteria of the Web Content Accessibility Guidelines (WCAG) 2.0 within two years of the rule's effective date and that all other Web pages on their primary Web sites are conformant within three years of the rule's effective date.
Usability Testing of Web Sites	• Requires carriers to test the usability of their accessible primary Web sites in consultation with individuals or organizations representing visual, auditory, tactile, and cognitive disabilities.
Equivalent Service	• Requires carriers to provide applicable Web-based fare discounts and other Web-based amenities to customers with a disability who cannot use their Web sites due to a disability. • Requires ticket agents to provide applicable Web-based fare discounts on and after 180 days from the rule's effective date to customers with a disability who cannot use an agent's Web sites due to a disability.
Online Disability Accommodation Requests	• Requires carriers to make an online service request form available within two years of the rule's effective date for passengers with disabilities to request services including, but not limited to, wheelchair assistance, seating accommodation, escort assistance for a visually impaired passenger, and stowage of an assistive device.
Automated Airport Kiosk Accessibility	
Scope, Coverage, and Kiosk Accessibility	• Requires U.S. and foreign air carriers that own, lease, or control automated airport kiosks at U.S. airports with 10,000 or more annual enplanements to ensure that all new automated airport kiosks installed three or more years after the rule's effective date meet required technical accessibility standards until at least 25 percent of automated kiosks in each location at the airport is accessible. Accessible kiosks provided in each location at the airport must provide all the same functions as the inaccessible kiosks in that location. These goals must be met within ten years after the rule's effective date.

[415] New DOT Rules Make Flying Easier for Passengers with Disabilities, DOT 92-13, Monday, November 4, 2013, at http://www.dot.gov/briefing-room/new-dot-rules-make-flying-easier-passengers-disabilities

	• Requires airlines and airports to ensure that all shared-use automated airport kiosks installed three or more years after the rule's effective date meet required technical accessibility standards until at least 25 percent of automated kiosks in each location at the airport is accessible. Accessible kiosks provided in each location at the airport must provide all the same functions as the inaccessible kiosks in that location. These goals must be met within ten years after the rule's effective date.
Identification and Maintenance of Accessible Kiosks	• Requires carriers and airports to ensure that accessible automated airport kiosks are visually and tactilely identifiable and maintained in working condition.
Joint and Several Liability	• Makes carriers and airports jointly and severally liable for ensuring that shared-use automated airport kiosks meet accessibility requirements.
Priority Access	• Requires carriers to give passengers with a disability requesting an accessible automated kiosk priority access to any available accessible kiosk the carrier owns, leases, or controls in that location at the airport.
Equivalent Service	• Requires carriers to provide equivalent service upon request to passengers with a disability who cannot readily use their automated airport kiosks.

Source: DEPARTMENT OF TRANSPORTATION, Office of Secretary

In addition to the above, on 29 May 2013, the DOT Enforcement Office issued additional guidance on the definition and application of pre-boarding requirements for PRMs using air services. Although a current ruling already exists - Part 382 of the Non-discrimination on the Basis of Disability in Air Travel, Subpart G: Boarding, Deplaning, and Connecting Assistance[416] – the DOT noted that "clarifications and interpretations have been disseminated through informal conversations or emails between the DOT and individual carrier representatives that may have over time resulted in some misunderstandings regarding the requirements of section 382.93". To avoid any misunderstandings, and to ensure that carriers are correctly and consistently applying those requirements the DOT Enforcement Office issued the additional guidance notice to ensure that carriers revise their pre-boarding policies in line with the clarifications included in the notice, if necessary.

The guidance requires PRMs to pre-board the plane before all other passengers, such as first class passengers, members of the military and passengers with small children. The Enforcement Office recognizes that boarding procedures vary for certain passenger types such as first and/or business class and may be different to the DOT's requirement. In such instances, the Enforcement Body requires airlines to submit an application seeking approval of their different procedure from the Enforcement Body. This is done so that the Enforcement Body can ensure that carriers are providing to PRMs an equivalent alternative[417] to pre-boarding.

Carriers are given 90 days from issuance of the notice (August 2013) to revise their pre-boarding procedures and comply with the ruling.

10.5 Global Unification / Convergence of Air Passenger Rights Legislation

The ICAO Stand

[416] http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=6cdf9c9813b31b68c57791b9c6858996&n=pt14.4.382&r=PART&ty=HTML#se14.4.382_193

[417] http://www.gpo.gov/fdsys/granule/CFR-2010-title14-vol4/CFR-2010-title14-vol4-sec382-10

Over the last decade, the industry has seen the flourishing of passenger rights rules across the world, which is an indication of an increased realisation of governments of the protection of passenger rights.

According to IATA, more than 50 countries, including Brazil, India, Pakistan, Venezuela, Thailand, and Turkey, have now developed some sort of a passenger rights legislation that are incompatible with one another, causing confusion to passengers and airlines alike[418]. While this has benefited passengers, there are also unintended effects as these legislations have created a matrix of mismatched rules that are creating difficulties for the industry as a whole. These difficulties come in the form of (1) hindrance to competition, growth and speedy resolution in the case of a compensation claim, (2) higher costs, and (3) potentially result in lower connectivity, stressful passengers and greater inconvenience.

In the wake of all of this, the ICAO issued in the first half of 2013 a series of Working Papers[419] (WP) with central subject "the protection of the consumer". Each of these Papers was presented by the referenced body (Member State or ACI) on the ICAO Sixth Meeting (ATConf/6) of the Worldwide Air Transport Conference that took place in Montreal on 18 – 22 March 2013. The underlying theme is that of a unanimous call for the development and adoption of a global consumer protection policy framework through the setting of general core principles on airline passenger consumer protection for the safeguarding of consumer interests.

The Paper list, in the order presented on ICAO's website, is as follows:

- Proposal for the Internationalisation and Standardisation of Consumer Protection Regulations in the Field of Air Transport (ATConf/6-WP/30); WP presented by Chile.
- Establishment of an Ad-Hoc Working Group to Study the Development of Model Text for Consumer Protection Regulations in the Field of Air Transport (ATConf/6-WP/43); WP presented by Saudi Arabia on behalf of a group of Arab States.
- Achieving Compatibility in Consumer Protection Regulations (ATConf/6-WP/45); WP presented by the United States of America.
- Air Transport and the Protection of the Consumer (ATConf/6-WP/47); WP presented by 54 Member States, Members of the African Civil Aviation Commission (AFCAC).
- Basic Principles for Consumer Protection (ATConf/6-WP/55); WP presented by Ireland on behalf of the European Union (EU) and its Member States1 and by the other Member States of the European Civil Aviation Conference2 (ECAC).
- Consumer Protection in Air Transport – Singapore's Experience (ATConf/6-WP/79); WP presented by Singapore.
- Consumer Protection Regulation (ATConf/6-WP/83); WP presented by Indonesia.
- Passenger Protection Under Cases of Flight Disruption (ATConf/6-WP/91); WP presented by the Airports Council International (ACI).
- Harmonisation of Consumer Protection Regulation (ATConf/6-WP/95); WP presented by Brazil.
- Enhancing Consumer Protection by Legislation (ATConf/6-WP/98); *WP presented by China.*

The sources to the Working Papers listed above can be found in Table 10.6 below:

[418] http://www.iata.org/publications/airlines-international/april-2013/Pages/passenger-rights.aspx

[419] http://www.icao.int/meetings/atconf6/Pages/WorkingPapers.aspx

Table 10.6: ICAO Working Paper Sources

ICAO Working Paper:	Website Address:
ATConf/6-WP/30	http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-wp030_en.pdf
ATConf/6-WP/43	http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-wp043_en.pdf?_sm_au_=i5VDbGnNZkHMLDRs
ATConf/6-WP/45	http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-wp045_en.pdf?_sm_au_=i5VDbGnNZkHMLDRs
ATConf/6-WP/47	http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-WP47_en.pdf?_sm_au_=i5VDbGnNZkHMLDRs
ATConf/6-WP/55	http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-wp055_en.pdf?_sm_au_=i5VDbGnNZkHMLDRs
ATConf/6-WP/79	http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-wp79_en.pdf?_sm_au_=i5VDbGnNZkHMLDRs
ATConf/6-WP/83	http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-wp83_en.pdf?_sm_au_=i5VDbGnNZkHMLDRs
ATConf/6-WP/91	http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf.6.WP.091.en.pdf?_sm_au_=i5VDbGnNZkHMLDRs
ATConf/6-WP/95	http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf.6.WP.095.2.en.pdf?_sm_au_=i5VDbGnNZkHMLDRs
ATConf/6-WP/98	http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-wp098_en.pdf?_sm_au_=i5VDbGnNZkHMLDRs

Source: Mott MacDonald

It is apparent that States in many parts of the world are facing common industry challenges as a result of the accelerated growth in the industry and increased competitiveness. However, reasons such as the varied degrees of social and economic development have meant that States have adopted varied regulations and maintained different levels of consumer protection.

Saudi Arabia recommends the establishment of an ad-hoc working group and requested assistance from consumer rights protection specialists that will develop a standard regulation code to safeguard consumers' rights to eliminate differences in legislations, so that such a standard regulation code may be used as guidance by Member States. This was similar to the call from Members such as the US, the Members of the African Civil Aviation Commission (AFCAC), the EU and the European Civil Aviation Conference (ECAC), for ICAO to work together with other relevant Bodies, the industry and other stakeholders to develop a set of general core principles on airline passenger consumer protection. The Airports Council International (ACI) calls the requirement for the core principles to also address the needs for both normal operations and periods of flight disruption. So it recommends that the ICAO provides detailed guidance to Member States through the Facilitation Manual (Doc 9957) around contingency plans for periods of flight disruption. In a similar note, Chile recommends the development of an orientation guide, code of conduct or draft multilateral agreement, which standardises regulations on the protection of passenger rights to eliminate overregulation and achieve an appropriate balance between air passenger protection and airline competitiveness.

The State of Singapore on the other hand, based on its own experience, recommends the establishment of a more liberal air services policy that accounts for a balance between passenger and airline interests businesses and the costs of regulatory enforcement. The State of Singapore has also been working on educating passengers on the wide range of choices available with regards to fares, service standards and contractual obligations. The State consequently suggests that ICAO should take into consideration that different approaches have worked well under different contexts, and accord States the flexibility to develop consumer protection policies based on their own unique socio-political and economic context.

The State of Indonesia issued in 2012 Ministerial Decree No. 77 on Air Carrier Liability, adopting the Montreal Convention of 1999 principles and also the Law on Consumer Protection with more specification for commercial air transport activities for domestic flights. This ruling will form the basis for regulating international flights and to prepare the accession to the Montreal Convention 1999, however the State is faced with jurisdiction challenges, since the Indonesian legal system law does not recognise any execution from foreign court decisions. It therefore recommends that ICAO develops not consumer protection principles to be used by Member States as a guideline and not as a strict regulation, as well as alternative solutions for States that have legal constraints.

Last but not least, the State of China's observation is that the advancements on consumer protection are weak compared to aviation safety. Thus, the State calls for the need for higher importance placed on passenger protection by each Member State and the setting of a minimum level of protection to be suggested by ICAO. China thus recommends that ICAO provides: (1) policy guidance in the form of additional training courses or seminars for the benefit of States, (2) coordination of the Member States efforts and (3) assistance to the States for the addressing of consumer protection issues, whilst (4) ICAO continues to monitor consumer protection issues and explore the feasibility of developing a more formal arrangement, i.e. a "global code of conduct". Unlike other Member States, China also recommends the revision of the indicative framework proposed in Appendix B of ATConf/6-WP/5[420].

Table 10.7 below provides a comparison of the original ICAO Principle suggestions and the revised Principles from the State of China.

Table 10.7: State of China Recommended Revisions to Appendix B of ATConf/6-WP/5

Annex B General Principle Possible Content (ICAO)	Annex B General Principle Possible Content (Revised by China)
Flight delay assistance: **Passengers shall be provided appropriate assistance [TO BE DEFINED] by the carrier in cases of flight delays. In case of a major disruption [TO BE DEFINED], the passenger shall be entitled to assistance during [NUMBER OF HOURS/DAYS TO BE DEFINED].**	**Flight delay assistance:** Passengers shall be provided appropriate assistance ***(including accommodation and compensation)*** (TO BE DEFINED) by the carrier in cases of flight delays. In case of a major disruption (TO BE DEFINED), the passenger shall be entitled to assistance during (NUMBER OF HOURS /DAYS TO BE DEFINED). ***Passengers shall be allowed to disembark after (NUMBER OF HOURS TO BE DEFINED) hours on aircraft during which time the aircraft stays on the tarmac).***
Complaints handling system: **Passengers shall have access to a complaint's handling procedure which is expeditious, fair and practicable.**	**Complaints handling system:** ***Air transport operators including foreign air transport operators shall establish passenger complaints handling office in accordance with national rules and regulations of the States.*** Passengers shall have access to a complaint's handling procedure which is expeditious, fair and practicable.

Source: Mott MacDonald

[420] ICAO Working Paper: Consumer Protection and Definition of Passenger Rights and Different Contexts, at http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-wp005_en.pdf

In total 22 Information Papers (IP) also were presented at the Conference, three of which included in their agenda items consumer protection and the related regulatory framework. Worth mentioning in Chapter 10 is the IP presented by the Secretariat and that by Australia.

On the first Paper (ATConf/6-IP/1[421]) the Secretariat provides an overview of the findings around the effectiveness of passenger protection regulation in various regions, which was recommended at the eleventh meeting of the ICAO Air Transport Regulation Panel (ATRP/11[422]) held on the 04-08 June 2012. The IP reveals a general worldwide conclusion on the effect to the quality of air transport services is challenging, given the specific regulatory, commercial or operational features of the region or the State concerned. More specifically, although in the US the introduction of regulations regarding delays and cancellations coincides with a reduction on the frequencies of these, it is not clear whether the two items are correlated. In contrast, passenger complaints increased, confirming that other factors may play a role in passenger satisfaction levels. The study of the EU market found no relationship between the adoption of Regulation EC261 and an impact to delays and cancellations, whilst for markets such as Singapore, passenger education seemed to have a negative impact on airline complaints.

Under the second IP (ATConf/6-IP/21[423]), Australia presented the legal framework adopted for consumer protection, which provides passengers with a baseline set of protections while ensuring air passengers are free to choose aviation products with ticket conditions and service level standards that are appropriate to their needs. According to the Member State, "this approach facilitates cheap fares and a vibrant aviation industry that serves the needs of Australians well. Australia does not see a need for additional aviation specific regulation for consumer protection at this time." Australia is a signatory to the 1999 Montreal Convention for international passengers regarding passenger death/injury, damage to baggage, and delays, however its domestic flights are covered by a separate framework based on the Warsaw Convention and regulated by the Australian Consumer Law (ACL). The State and the Australian carriers have worked together to introduce the 'Customer Charters' that outline the airlines' service commitments and complaint handling procedure, and to establish the 'Airline Customer Advocate' body. This is an independent body for handling complaints, funded by participating airlines, and works with passengers and airlines to resolve complaints within 20 days. It is an alternative option if passengers are unable to resolve a complaint directly with the airline and it does not replace ACL's role. The IP recognises Australia's achievement in applying a framework that provides strong passenger protection whilst allowing passengers to benefit from a wide choice of products.

It is fair to conclude that the Sixth Worldwide Air Transport Conference (ATConf/6) mirrored a strong push across all Members for greater compatibility and convergence of legislation;

"ICAO should, in particular, develop, in the short term, a set of high-level non-prescriptive core principles on consumer protection which strike an appropriate balance between protection of consumers and industry competitiveness and which take into account the needs of States for flexibility, given different State social, political and economic characteristics; these core principles should be consistent with existing instruments, in particular the Convention for the Unification of Certain Rules for International Carriage by Air, adopted in Montréal on 28 May 1999"[424]

[421] ICAO Information Paper: Effectiveness of Consumer Protection Regulation , at http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-ip001_en.pdf

[422] http://www.icao.int/Meetings/atconf6/Documents/ATRP_en.pdf

[423] http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf6-ip021_en.pdf

[424] ICAO ATCONF Agenda Item 2.3, at http://www.icao.int/Meetings/atconf6/Documents/FinalReport/ATConf6_wp104-2-3_en.pdf

The conference also included a reflection of the variety of State needs that the passenger legislation should cater for considering the different characteristics some States have, calling also for the requirement of flexibility by these laws. After all, the aviation industry is one of the most dynamically evolving industries, and the creation of a sustainable and favourable regulatory environment is also an evolving challenge.

ICAO is expected by Member States to play a leading role in developing and promoting principles, a framework and guidance on consumer protection that address evolving issues at a global level.

ICAO's Working Papers reflect the industry body's work towards more regulatory convergence between the member States which could be agreed between the States and ICAO, whilst ensuring that there are coherent laws and regulatory mechanisms that are not contradicting existing Conventions such as that of Montreal.

Glossary

AMC	Acceptable Means of Compliance (ICAO)
ACARE	Aeronautics Research in Europe
AdP	Aeroports de Paris
ASD	Aerospace and Defence Industries Association of Europe
AFAC	African Civil Aviation Commission
ANS	Air Navigation Service
ANSP	Air Navigation Services Provider
ASA	Air Services Agreement
ATFCM	Air Traffic Flow and Capacity Management
ATM	Air Traffic Movements
ATRP	Air Transport Regulation Panel (ICAO)
ATOL	Air Travel Organiser's Licensing
ALPA	Airline Pilots Association
AAHK	Airport Authority of Hong Kong
AAI	Airport Authority of India
ACI	Airports Council International
AWAGG	Airworthiness Assurance Working Group
ANA	All Nippon Airways
AAG	American Airlines Group
AIAA	American Institute of Aeronautics and Astronomy
AEA	Association of European Airlines
ACCC	Australian Competition and Consumer Commission
ACL	Australian Consumer Law
ASK	Available Seat Kilometres
BSP	Billing Settlement Plan
BAE	British Aerospace
CODA	Central Office of Delay Analysis
CAAC	China Airports Construction Corporation
CAA	Civil Aviation Authority
CARC	Civil Aviation Regulatory Commission
CASA	Civil Aviation Safety Authority (Australia)
CAT	Commercial Air Transport
COMAC	Commercial Aircraft Corporation of China
CIS	Commonwealth of Independent States
CAGR	Compound Annual Growth Rate
DoT	Department of Transport
DGCA	Directorate General of Civil Aviation
EBIT	Earnings before Interest and Tax
EIA	Environmental Impact Assessment
EUR	Euro (Currency)
EADS	European Aeronautical Defence and Space Company
EAAWG	European Ageing Aircraft Working Group
EAA	European Agency for Aviation
EBAA	European Business Aviation Association
EUCCAP	European China Civil Aviation Project
ECAC	European Civil Aviation Conference
ECAA	European Common Aviation Area
EEA	European Economic Area

ELFAA	European Low Fares Airline Association
ENP	European Neighbourhood Policy
ENISA	European Network and Information Security Agency
EP	European Parliament
EU	European Union
FRMS	Fatigue Risk Management Systems
FAA	Federal Aviation Authority
RP1	First Reference Period
FTL	Flight Time Limitations
FTK	Freight Tonne Kilometres
FABEC	Functional Airspace Block European Central
FAB	Functional Airspace Blocks
GAMA	General Aviation Manufacturers Association
GDP	Gross Domestic Product
IFR	Instrument Flight Rules
IATA	International Air Transport Association
IAG	International Airlines Group
ICAO	International Civil Aviation Organisation
IAC	Interstate Aviation Committee
JAL	Japan Airlines
JCAB	Japanese Civil Aviation Bureau
KPIs	Key Performance Indicators
KPA	Key Performance Areas
LCA	Large Civil Aircraft
LATAM	Latin America
LAGs	Liquids, Aerosols and Gels
LLCs	Low Cost Carriers
MRO	Maintenance, Repair and Overhaul
MTOW	Maximum Take-off Weight
MoU	Memorandum of Understanding
MPPA	Million Passengers per Annum
NAS	National Airspace System
NPPs	National Performance Plans
NSA	National Supervisory Authorities
NOP	Network Operations Plan
NEO	New Engine Option
NG	Next Generation
PKP	Passenger Kilometres Performed
PLF	Passenger Load Factors
PRC	People's Republic of China
PCP	Pilot Common Approach
PSO	Public Service Obligation
RPAS	Remotely Piloted Aircraft Systems
R&D	Research and Development
RITA	Research and Innovative Technology Administration Bureau
RPK	Revenue Passenger Kilometres
SOC	Security Operation Centres
STEB's	Security Tamper Evident Bags
STCA	Short Term Conflict Area
SES	Single European Sky

SESAR	Single European Sky ATM Research
TTA	Target Time of Arrival
TMA	Terminal Manoeuvring Area
THY	Turkish Airlines
UK	United Kingdom
UPS	United Postal Service
USD	United States Dollar
USA	United States of America
UAS	Unmanned Aircraft Systems
WCAG	Website Content Accessibility Guidelines