## Annual Analyses related to the EU Air Transport Market 2016

**Final Report** 

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**European Commission** 

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# **Executive Summary**

### Foreword

The European Commission has concluded annual reports since 1998 as part of its function as an observatory of the European Air Transport Industry. The reports have highlighted developments on legislative and regulatory measures and covered analysis of capacity, traffic and financial performance of airlines and airports, as well as topics such as air traffic control, environment, consumer issues and aircraft manufacturing.

This 2016 report covers latest developments in the air transport industry during 2015 and the first half of 2016. It is structured in 9 chapters covering:

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

In addition to the above chapters, the report is also accompanied by the Statistical Annex. This Annex provides in tabulated format the key data-sets analysed to support various topics reflected in this report.

This Executive Summary provides highlights of the main report.

The key highlights are:

- For 2016, global traffic was expected to grow by 6.3% over 2015, with annual passengers surpassing 3.7 billion. This growth is a slowdown from the 7.1 per cent achieved in 2015 which was the highest annual growth rate since 2010, the year following the global recession of 2008-09. This growth is against a background of global GDP growth in 2015 of around 2.4%.
- Lower air fares (on average, 5% lower in 2015 vs 2014), driven by continuously low fuel jet prices, boosted passenger traffic growth in 2015.
- Air traffic is projected to grow in the long-term, driven by global GDP growth. Annual Revenue Passenger Kilometres (RPKs) are forecast to grow over the period 2016-2035 at a rate of 4.5% pa (Airbus) and 4.8% pa (Boeing).
- The fastest growth rates are anticipated in the developing Asian, Middle Eastern, Latin American and African markets. In the more mature markets, North American is expected to grow at 2.9% pa (Airbus) to 3.1%pa (Boeing), and European is expected to grow at an average rate of 3.7% pa (both Airbus and Boeing).
- Technology advances over the last six years have changed the face of aviation, with the introduction of more point-to-point flying using advanced aircraft such as the Airbus A350 and the Boeing B787 families of efficient and environmentally-friendly twin-engine aircraft.
- Airlines globally achieved record profitability in 2015 with operating margins of at an all-time high of 8.8%, while average air fares decreased by 5% against a backdrop of fuel prices averaging 44% lower than in 2014.
- Airline consolidation continued this year, the most notable between the three US majors, resulting in evident strong performances in relation to revenues, operating profits, RPKs and passengers. Low Cost Carriers' share of total 2015 passenger volumes may stand below 20%, but compared to 2014, this presented a 3% growth. The growth of megahub airports in the Gulf

region continued the fastest development worldwide, whilst political instability and terrorist threats in North Africa and a slowdown in commodity-driven economies hindered growth in Africa.

• Airport revenues grew by 8.2% in the most recent year reported (2014), and non-aeronautical revenues now make up 46% of total income.

## Air Traffic Trends

The number of air passengers carried worldwide grew by 6.3% to a record 3.7 billion in 2016, continuing the recovery trend since the global financial crisis on 2008/09. This growth was driven by 3.1% growth in the global economies and reductions in air fares aided by fuel prices averaging 43% lower in 2015 than in the previous year.



#### World Annual Traffic Expressed in Passengers Carried

#### Source: Airbus, ICAO

In terms of arriving and departing passengers handled at the world's airports, traffic reached 7 billion passengers in 2015, up 6.4% on the previous year. This was a faster rate of growth than the 5.5% seen in 2014. Growth accelerated in the North America and Asia-Pacific regions, offset slightly slower growth in other regions. The Middle East remained the world's fastest growing region with 9.6% growth driven by continued growth of the Gulf areas megahub airports, while the slowest growth was seen in Africa at 0.6% in 2015, sharply slower than in 2014 as result of instability and terrorist threats in North Africa and a slowdown in commodity-driven economies.

#### 6.4% World 5.5% 5.3% North America .2% 9.6% Middle East 10.8% Latin America -5.3% Carribean 6.4% 5.2% Europe 5.5% 8.6% Asia - Pacific 6 6% 2015-14 0.6% Africa 2014-13 0.0% 5.0% 10.0% 15.0% YoY Change

Airport Passengers Handled - Growth Rate by Region

Source: ACI World Airport Traffic Database, 2016

In the past 5 years there has been faster growth in direct air services than connecting flights – direct passengers grew at a rate of +6.0% pa between 2010 and 2015, while connecting passengers grew at a rate of +4.0% pa during the same period. This trend reflects increased use of the latest generation 'hub bypass' aircraft types, such as the Boeing 787 and Airbus 350 types now entering service.





Source: Sabre ADI

Looking forward, global air travel measured in Revenue Passenger Kilometres (RPKs) is forecast to grow at between 4.5% pa (Airbus) and 4.8% pa (Boeing) over the next 20 years to 2035. The fastest growth rates of around 6% pa are expected in the emerging economies of the Asia-Pacific, Middle East, Africa and Latin America. The more mature European market is forecast to grow at 3.7% pa, while North America is predicted to grow at between 2.9% pa (Airbus) and 3.1% pa (Boeing).



Air Traffic Growth Projections by Region for 2016-2035

Source: Airbus/Boeing, 2016

#### Air Cargo

Global air cargo grew by a modest 2% in 2015 as growth in global trade stalled towards the middle of the year amid uncertainty emanating from Chinese manufacturing and globally weak industrial production. However, there is continued demand for the speed and reliability benefits that air freight offers. Industries that require transport of time-sensitive and high-value commodities such as perishables, consumer electronics, high-fashion apparel, and pharmaceuticals, as well as the logistics chains serving the rapidly growing e-commerce industry depend on the unique capabilities that air cargo provides and offers a new area of growth.





Source: World Development Indicators

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### Airlines

The worldwide airline industry performed strongly in 2015, achieving record operating margins of 8.8% despite offering consumers lower air fares (on average, 5% lower in 2015 vs 2014), driven by continuously low fuel jet prices. At the same time, much of the industry also benefited from a period of relative capacity discipline. Airlines reacted to demand growth by cautiously adding capacity. Between 2014 and 2015, global market capacity increased by 5.6% compared with 6.5% passenger growth.



Airline Worldwide industry, Operating margin (%) and variation on crude oil prices, Brent (YoY %)

US carriers have led global airline profitability in 2015. Following consolidation in the US industry, the three US majors (American Airlines, Delta Air Lines and United) are the top performers in all global rankings: revenue, operating profit, RPK and passengers. Worldwide, the operating profit reported by airlines has been increasing steadily in the past 5 years, with 18 airlines worldwide recording operating profits of more than \$1bn during 2015.

European carriers also had a successful 2015. Despite low economic growth in the region (+1.6% GDP growth in the Euro zone in 2015 compared to 2014), European carriers surpassed 2014's operating profits: \$7.4 billion in 2015 compared to \$1 billion in the previous year. Europe's top three airlines for profitability were Lufthansa, Ryanair and IAG.

Outside of Europe and North America, Chinese carriers continued their upward momentum with Air China, China Eastern and China Southern increasing their positions in the rankings in terms of RPKs and total passengers carried. In the Middle East, Emirates was the only airline placed amongst the top 10 most profitable airlines in 2015.

Source: IATA Industry Forecast, June 2016



Top Airlines by Airline Groups and Airlines by Operating Revenue, Operating Net Profit, RPKs and Passengers in 2015

Top 10 groups by revenue		Top 10 groups by net profit		Top 10 Airlines by RPK		Top 10 airlines by	
American Airlines Group	\$41.0bn	American Airlines Group	\$7.6bn	American Airlines	358,823m	American	201.2m
Delta Air Lines	\$40.7bn	United		Lines	337,264m	Delta Air Lines	179.4m
United	<b>*</b>	Continental	\$7.3bn	Airlines	335,728m	Southwest Airlines United	144 6m
Continental Holdings	\$37.9bn	Delta Air	\$4.5bn	Emirates Airline	255,176m		4.40.4m
Lufthansa	\$35.4bn	Lines Emirates		Southwest	189,057m	Airlines	140.4m
Group		Group	\$2.2bn	Airlines	400.470	Ryanair	106.4m
KLM Group	\$28.7bn	Southwest	\$2.2bn	China	162,173M	Eastern	93.8m
FedEx	\$26.5bn	Airlines	ψ2:2811	Southern	153,749m	Airlines	
Emirates Group	\$25.3bn	Lufthansa Group	\$1.9bn	Airlines China		China Southern	84.0m
IAG	\$25.2bn	Ryanair	\$1.7bn	Eastern	146.291m	Airlines	0.110111
Southwest Airlines	\$19.8bn	IAG	\$1.7bn	Airlines	-, -	Lufthansa	79.3m
		Japan	\$1.5bn	British	142 016m	EasyJet	68.6m
China Southern	\$17.8bn	Air China	\$1.2bn	Airways Air France	141,207m	Turkish Airlines	61.2m

Source: Mott MacDonald analysis of ATW

Labour was the second-largest operating expense for airlines after fuel during 2015.

Worldwide Industry Statistics							
Worldwide Airline Industry	2014	2015	2016F				
Labour costs, \$ billion	143	144	153				
% change over year	4.8%	0.6%	6.4%				
Employment, million	2.47	2.54	2.61				
% change over year	2.9%	2.8%	2.8%				
Productivity, atk/employee	463,996	479,745	495,912				
% change over year	2.4%	3.4%	3.4%				
Unit labour cost, \$/ATK	0.125	0.118	0.118				
% change over year	-0.5%	-5.4%	0.1%				
GVA/employee, \$	95,646	95,143	100,186				
% change over vear	4.2%	-0.5%	5.3%				

Source: IATA Economic Performance of the Airline Industry, June 2016

Airlines have generally been effective in controlling growth in labour costs and improving productivity in 2015, aided by underlying growth in traffic.

IATA estimates total employment by airlines reached 2.5 million in 2015, a gain of almost 3% compared to 2014. Productivity, measured in ATK/employee, was also higher in 2015, increasing by 3% compared to 2014, and is forecast to improve further in 2016. The average employee generated close to 480,000 ATKs in 2015. Wages and jobs also rose as employees shared the benefits of improved performance.

#### Industry (\$ bn) and % of total revenues 80 9.0% 70 11.7% 10.4% 8.4% 8.3% 60 7.4% 7.0% 50 40 30 2013 2010 2012 2014 2016F 2011 2015F Cargo Revenues, \$ billion

Worldwide Estimate of Cargo Revenues in the Airline

Source: IATA Industry Forecast, June 2016

With regards to air cargo, airline revenues decreased by 16% between 2014 and 2015 from \$62.5 billion to \$52.8 billion. The global economy softened towards the end of 2015 leading to weaker air cargo demand and downward pressure on cargo yields.

In contrast to the passenger side of the business, the airline industry freight load factor average was below the industry average for the first time since 2004. A combination of soft demand and significant capacity increases, particularly in belly-hold cargo capacity, contributed to the drop in load factor. Low freight loads directly impact yields and revenues.

### Airports

Worldwide airport revenues reached \$142bn in 2014 (the latest year for which data is available), up 8.2% on previous year, on the back of strong growth in scheduled passenger traffic of 7.2%. Revenue growth was particularly strong in Latin America, Africa and the Middle East, but below the global average in Europe and North America.

Airport revenues are principally generated through aeronautical (aircraft and passenger charges) and non-aeronautical methods (terminal and landside concessions). The table below shows the trend of non-aeronautical revenues constituting a growing share of total revenues as airports seek to diversify their revenues streams.

Region	Total Revenue in 2014	Growth vs 2013	% Aero Revenue	% Non-Aero Revenue	Aero Rev Growth YoY	Non-Aero Growth YoY
Africa	3,000	17.0%	70%	30%	0%	13%
Asia - Pacific	41,800	8.3%	49%	51%	10%	16%
Europe	50,800	7.0%	59%	41%	0%	5%
Latin America/Caribbean	8,100	25.9%	59%	41%	9%	27%
Middle East	10,900	13.0%	48%	52%	18%	33%
North America	27,900	4.8%	52%	48%	4%	16%
World	142,500	8.2%	54%	46%	5%	14%

#### Airport Revenue 2014 (USD m)

Source: ACI Airports Economic Survey (2015)

Airport operating costs grew more slowly than revenues, by 7.3% in 2014, resulting in an overall increase in airport profitability. In 2014, Return on Invested Capital (ROIC) reached 6.3% for the industry as a whole. However, there were considerable variations depending on the region and size of the airports.

Small airports (less than 1 mppa) are markedly less profitable than larger airports, but profitability does not increase linearly with size – the most profitable airports are in the 5-15 mppa size band. Airports in emerging economies achieved 9.9% ROIC compared with 5.6% ROIC for airports in advanced economies.



### Airport Returns and Size Comparison

Source: ACI 2015 Economics Survey

### Aircraft Manufacturing and MRO

There were 2,375 net commercial aircraft orders in 2015, down 30% on the previous years' orders. Airbus secured 1,100 new orders in 2015, down 37% on 2014 when over 1,700 orders were placed. Boeing on the other hand secured 840 new orders during 2015, a 45% reduction on 2014 (1,527 orders).

Narrowbody airliners represented close to two-thirds of total orders, although orders for these types were sharply down on previous years. Airbus secured 900 of these orders, mainly for the A320neo, while Boeing recorded 550 orders, most of them for its new 737 Max.

Despite this slowdown in new orders, both Airbus and Boeing have strong order backlogs and are increasing production rates to meet the long-run demand from airlines.



#### Airliner Orders 2005-2015

Source: Fleet Watch 2016, Flightglobal

Airbus and Boeing delivered 1,366 aircraft in 2015, with Boeing delivering a higher share globally and in all regions apart from Latin America and the Middle East. Of these deliveries, 46% were to airlines in the Asia-Pacific region.



#### Airbus and Boeing Deliveries by Region (aircraft units) in 2015

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Looking forward, between 2016 and 2035 growth in air travel demand is expected to result in delivery of between 33,070 (Airbus forecast) and 37,340 (Boeing forecast) new commercial jet aircraft (excluding regional jets). Airbus and Boeing broadly agree on the level of demand for wide-body aircraft, but Boeing sees greater demand for narrow-body aircraft, and only one-third of the number of very large aircraft.





Source: Mott MacDonald analysis of Airbus Global Market Forecast 2016-2035 and Boeing's Current Market Outlook 2016

### **Global MRO Activity**

The global civil MRO spend in 2015 was \$64.3 billion, up by 3.5% compared to the \$62.1 billion spent in 2014. With the continuing growth of aircraft deliveries and the possibility of deferring older aircraft retirements (at least until low fuel prices keep reducing the economic benefits of using only new aircrafts and engines), the medium term prospect for this activity is also positive.

Looking at the MRO global market share by region, North America claimed the largest share in MRO activity (29%), with Asia-Pacific (28%) and Europe (26%) following close. Based on current aircraft orders, the Asia-Pacific share of the global MRO market is expected to increase and potentially become the largest global region for MRO activity in the coming years.

### **Aviation's Economic Contribution**

Aviation's global economic impact (direct, indirect, induced and tourism catalytic) is estimated at \$2.7 trillion, equivalent to 3.5% of the world GDP in 2014. At the same time, air transport is a major global employer. The Air Transport Action Group (ATAG) reports that the air transport industry indirectly generates more than 62 million jobs globally.

Directly, the industry employs over 450,000 people working for airport operators, over 5.5 million working for other on-airport business (such as retail, car rental, freight services, etc.); close to 2.7 million are employed by airlines and over 1.1 million are working in civil aerospace for air navigation service providers.



Aviation Global Employment Impact, 2014 (latest report)



Source: Aviation Benefits Beyond Boarders, ATAG



Air Traffic Management

Source: Aviation Benefits Beyond Boarders, ATAG

Considerable progress was made in the development and global harmonisation of ATM technology in 2015 and this continued in 2016. This contrasted with a lack of change in the political and regulatory framework in the industry. The costs of this and importance of ATM were highlighted in several economic studies sponsored by airspace users.



Both the SESAR programme in Europe and NEXTGEN in the United States continued research and demonstrated innovative ATM solutions in the en-route and terminal airspace domains and increasingly including airports as part of the emerging network based future trajectory based management systems. Similar initiatives are occurring in Asia, the Middle East, Africa and South America as states fulfil the requirements of the ICAO Global Navigation Plan Block Upgrade Programme. However, the key strand is one of incremental implementation over a long period rather than large scale change in a short time frame. The change is coming from the deployment of particular key enablers such as ADS-B, PBN, datalink, SWIM and new trajectory based flight data processing systems. In addition, safely accommodating and enabling access to airspace for unmanned aerial systems and drones has become an urgent part of the research and deployment streams

2016 was marked in the US by a rejection of transforming the air traffic organisation of the FAA into a NAVCanada style not for profit entity. In Europe minimal progress was made in realising further provisions of the Single Sky legislation. However, as air traffic rebounds in and between both continents, ATM deployment is not being impaired by this lack of political change. In the US, upgrades to the national airspace system are being rolled out as incremental deployment of NEXTGEN technology and in Europe, SESAR had moved firmly into deployment with corresponding funding in line with the ATM Master Plan.

2016 saw Aireon make final preparations for the deployment of the initial phase of its space based ADS-B global surveillance programme and signed additional agreements with ANSPs. This is set to revolutionise CNS across the oceans and remote areas from 2018 as well as fulfilling ICAO and IATA requirements for enhanced tracking following the 2014 failings.

Cooperation between SESAR, NEXTGEN and other upgrade programmes in other states are increasingly leading to a harmonised development of global ATM which together with such initiatives such as Aireon, are going to revolutionise future ATM for the benefit of all airspace users.

### Market and Competition Issues

One key factor influencing the EU's aviation development is the Commission's Aviation Strategy document which has both focused regulatory activity in the field of aviation on common macro-economic objectives. The EU Aviation Strategy thereby also underpins the broad impact of aviation on connectivity for regions, international competitiveness of the European industry and thereby takes a new EU "holistic" approach to aviation.

Within the EU, the Commission's Aviation Strategy has triggered a political debate amongst Member States about the need to secure connectivity for their respective national interests – these national interest find their limitations in the State Aid Guidelines. The analysis of the key decisions taken by DG COMP in the Reporting Period shows that the recently modified Guidelines are evidently applied on each case, on the basis of a consistent policy. However, the application of the Guidelines does not always reflect the thrust of the Aviation Strategy. The market issue facing airlines and governments from peripheral regions or thinner, underserved markets is whether the Guidelines could not become one of several regulatory instruments to improve connectivity in otherwise underserved markets.

Internationally, the Commission's Aviation Strategy has shifted the focus from increasing the number of Open Skies agreements of the EU to more comprehensive agreements with key destination areas which not only improve market access opportunities, but seek to ensure fair competition within these markets. Such negotiations are currently undergoing.

The market is beginning to see structural changes. For European financial and strategic investors to be even more attracted to investments, the Aviation Strategy recognises the need for interpretative Guidelines on Ownership and Control restrictions. In the international markets, new structured for commercial co-operation are being developed by airlines and airline groups, which likewise will require regulatory attention.

The Aviation Strategy has placed the EU aviation policy on the political radar internationally.

However, disruptive challenges appeared in the wake of the UK referendum on the leaving the EU. The new US Administration has likewise given rise to uncertainty on how the US will position itself on future international trade agreements and whether it will continue to pursue a market-oriented aviation policy.

2016 was thus a year of progress, both in terms of delivery on the targets set forth in the Strategy paper, as well as increased growth of the sector albeit amidst structural changes; 2017 is thus far too uncertain to warrant substantiated forecasts.

### Environment

Aviation delivers social and economic benefits to European citizens and to citizens across the world. However, these benefits come at an environmental cost. Improvements in technology have mitigated some of aviation's environmental impacts, however environmental issues remain. Chapter 7, Environment and Sustainable Development, provides an overview of the main environmental and sustainability issues faced by the sector, and how these are being addressed though initiatives and technologies during 2015.

During 2015 there were numerous advances in climate change mitigation. Significant progress towards a global Market-Based-Mechanism (MBM) for managing carbon emissions was made at the International Civil Aviation Organisation (ICAO). Research into more efficient Air Traffic Management (ATM) was undertaken under the SESAR research program, and research into new technologies intended to provide more efficient engines, and reduced drag were undertaken under the Clean Sky research program. Airports continued to join the Airport Carbon Accreditation program, which aims to reduce carbon and increase airport sustainability, and progress on bringing alternative jet fuels to market continued.

Air quality issues also continued to be important for airports. In the UK, the debate about airport expansion in the South East continued to be influenced by air quality issues. In the rest of Europe airports implemented projects to improve air quality ranging from electric air side vehicles, to promoting model shift in travel to airports. Noise has also been an issue for airports. In 2015 the EC launched a consultation on the evaluation of the Environmental Noise Directive (END) (2002/49/EC), which will impact upon the management of noise by airport, and EC's Science for Environment Policy published a document capturing the latest research on 'Noise impacts on health'.

At European level, the Advisory Council for Aeronautics Research in Europe (ACARE) represents 40 members including the EC, as well as airlines, airports, regulators and research establishments. ACARE's environmental research is driven by five goals to be achieved by 2050. These are:

- CO<sub>2</sub> emissions per passenger kilometre reduced by 75%, NOx emissions by 90% and perceived noise by 65%, all relative to the year 2000.
- Aircraft movements are emission-free when taxiing.
- Air vehicles are designed and manufactured to be recyclable.
- Europe is established as a centre of excellence on sustainable alternative fuels, including those for aviation, based on a strong European energy policy.

• Europe is at the forefront of atmospheric research and takes the lead in formulating a prioritised environmental action plan and establishes global environmental standards.

### Security and Safety

### Safety

In 2015, there were in total 186 fatalities from 14 accidents, of which there were no fatal accidents involving jet aircraft. This makes 2015 the safest year in history. These statistics exclude the Germanwings co-pilot suicide and the MetroJet mid-air explosion following takeoff from Sharm-el-Sheikh airport deemed to be "fatal and non-fatal self-inflicted injuries or injuries inflicted by other persons". Following the Germanwings accident, the "2-persons-in-the-cockpit" rule was revisited and reconfirmed. Questions also arose with regards to the adequacy of the processes for the evaluation of the psychological state of pilots.







### Security

One Stop Security (OSS) is a bilateral agreement between countries which recognises the security standards and level of each other as equal. As a result, passengers arriving from one of the countries to transfer in the other towards their final destination do not need to be security screened an additional time. EC Regulation 2015/1998 introduces these standards and consolidates all amendments to its predecessor. It provides for the signing of future OSS agreements and regulates the process of auditing countries which apply for their security level to be recognised as equal to the one of the EU.



Another example of other countries seeking EU expertise is the ACI-Europe initiated a programme named "Airport Twinning". Under this programme an EU Member State will pair with a non-EU Member European State by seconding airport security staff to the partner country's airports. The aim is to improve the security measures and prepare the non-EU Member State for the audit of the EC, which will determine whether its security standards will be accepted as being equal to those of the EU. IATA also ran a series of training activities in Africa which aimed at promoting and standardising aviation security practices and educating personnel across the continent.

### Consumer Rights – Air Passengers

Regulation (EC) No 261/2004 is considered as central legislation on air passenger rights. Since its enactment in 2005, the Regulation has been subject to continuous scrutiny by the European Court.

The EC adopted guidelines on 10 June 2016 which aimed to improve the clarity of the passenger rights rules, ensure a better application and consistent enforcement by carriers and Member States and finally achieve a fairer market. This aim was also incorporated into the Aviation Strategy for Europe.

In addition, ICAO adopted its core principles on air passenger protection in 2015. These should serve ICAO member states as guidance when developing air passenger legislation. ICAO's core principles comprise fundamental recommendations and rights before, during and after travelling, including the provision of information at the airport, the communication in the event of disruptions and complaint handling.