Introduction

For this year’s Global Market Forecast we have chosen the theme of equations and numbers. It seemed appropriate as the economists and data analysts working on Airbus’ forecasts spend much of their day either searching for and evaluating new, complementary and relevant sources of data; then trying to find ways to use these numbers more effectively to improve the reliability and validity of our analyses and forecasts. They rely daily on equations and ever more capable software tools to achieve this.

But more than this, a key part of their work is to check and challenge the methodologies used and the analyses produced against real World behaviours of passengers and airlines alike. Their aim is to identify a market-based vision of air transport over the next 20 years backed up by rigorous data, clear graphics and industry insight.

The numbers resulting from our equations will in time become real passengers and aircraft, and their worldwide flows will drive aviation infrastructure and investment.

It may sound a little geeky to quote the philosopher and mathematician Plato, but he got it right when he said “A good decision is based on knowledge and not on numbers.” Our aim is to apply knowledge to numbers and through the GMF to share this with you.

We hope that you find the 2015 Global Market Forecast informative and useful. We seek to improve our analyses continually, and your questions, challenges and suggestions help us advance towards that goal. Don’t forget you can download our App in several formats from tablet to smartphone. It complements the forecast and includes our thoughts in an interactive format.

As usual this is best read on an aeroplane, perhaps taking advantage of the quiet, smooth comfort of your next A380 flight. Enjoy!
CONTEX

The benefits of aviation reach more of the World’s people every year, as wealth grows, deregulation continues, particularly to and from the World’s developing markets, and Visa requirements and processes simplify. As well as benefiting individuals, countries, regions also profit. In Europe for example ACI recently stated that aviation represents 4.1% of European GDP and nearly 12 million jobs. According to ICAO, some 3.2 billion passengers used air transport for their business and tourism needs in 2014, up approximately 5 per cent compared to 2013. Aircraft departures reached 33 million globally during 2014, a record, surpassing the 2013 figure. Solid global economic growth and improving World trade helped World scheduled passenger traffic (revenue passenger-kilometres or RPKs) grow at a rate of 5.9 per cent in 2014, this compared to 5.5 per cent in 2013, above the long term trend. Demand is being met through more of latest technology aircraft, and by airlines striving to increase their efficiency by filling every available seat, with average load factors now close to an impressive 80%. On ground this would be like seeing every car on the road with four of their five seats filled. Airlines continue to work with manufacturers to use every available centimeter in the aircraft to maximise operational efficiency and revenues. All this whilst providing the service that customers demand in terms of schedules, comfort and ticket price. Airports are also key, growing to meet origin and destination demand, which for international flights is relatively concentrated. Today, forty seven Aviation Mega-cities focus over 90% of long-haul flights and nearly a million passengers a day. Growing demand to these cities generates its own challenges, with thirty-nine of the forty-seven experiencing various levels of congestion. Larger aircraft including the A380 have been part of the solution, freeing up frequencies to allow new operations, and adding to airline efficiency by lowering the cost per passenger flown. It is forecast that aviation will continue to grow, this being both an opportunity and a challenge.

The challenge for manufacturers will be to continue to reduce the environmental impact of flights in the years to come, and to give airlines the tools they need to meet the demands of both their passengers and stakeholders. The Airbus Global Market Forecast is one of the tools Airbus uses to meet this challenge, a piece of analysis used to inform its day to day decision making, from production rates to product policy deliberations.

Airbus forecasters take the best macro-economic and operational data and combine it with a forecasting methodology developed over 20 years, performing more than 200 traffic flow forecasts, modelling over 300,000 Origin and Destination (O&D) city pairs and analysing demand from nearly 800 individual airlines in order to deliver the forecast.

DEMAND FOR MORE THAN 32,500 NEW AIRCRAFT

Passenger aircraft (≥100 seats) and jet freight aircraft (> 10 tons)

<table>
<thead>
<tr>
<th></th>
<th>New Deliveries</th>
<th>Converted</th>
<th>Retired</th>
<th>Freighter Fleet</th>
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<tr>
<td>Passenger</td>
<td>32,585</td>
<td>1,552</td>
<td>11,834</td>
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<td>Fleet</td>
<td>31,781</td>
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<td></td>
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<tr>
<td>Retired</td>
<td>804</td>
<td></td>
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</table>
DELIVERIES AND THE FLEET

Total new deliveries, both passenger and freighter aircraft are expected to be close to 32,600 aircraft. Nearly 14,000 passenger aircraft will be retired or converted to freighter, to be replaced with more fuel efficient latest generation aircraft. Most deliveries are forecast for Asia-Pacific with 39% of the demand, or nearly 12,600 aircraft. North America and Europe, more mature markets, will still require 11,900 aircraft (37% of total deliveries) to meet their airlines’ needs.

DELIVERIES AND THE FLEET

NEW AIRCRAFT DEMAND PASSENGER AND FREIGHTERS

TRAFFIC

Since 2001, despite facing two of the worst downturns the commercial aviation industry has experienced, traffic measured in Revenue Passenger Kilometres (RPKs) has grown a remarkable 85%. The factors which have led to this increase, including the emerging economies, tourism, and liberalisation, will continue to drive traffic growth. RPKs are expected to double again in the next fifteen years, and grow 145% to 15.2 trillion RPKs by 2034. Traffic from and to the more mature markets is forecast to grow, with flows such as Western Europe to the US growing 1.7 times over the next 20 years. The Domestic Chinese flow is expected to become the largest single traffic flow, growing nearly four times over this period, with the demographics and density of traffic requiring ever larger aircraft to meet the demand. International long-haul traffic is expected to grow faster than domestic and international short-haul traffic, with its annual growth rate 4.7% and its overall share of traffic growing to 45%. 

20-year new deliveries of passenger and freighter aircraft

HIGHLIGHTS

The ability to effortlessly fly anywhere in the World is often taken for granted; it is only if we try to imagine the World without aviation that its impact can start to be realised. Over the next 20 years our forecast suggests that more people from the emerging economies will take the benefits of aviation. Asia-Pacific is often cited, but people including those from Africa, and Latin America will also have greater access to flying both economically and physically. When they fly they will likely be most familiar with single-aisle aircraft types like the A320 family and the 737. Over the next 20 years 70% of new deliveries will be for this class of aircraft. Long-haul travel will continue to be characterised by larger aircraft like the A330, A350 and A380. Twin-aisle types will represent a quarter of all new deliveries, but 44% of their value. VLAs like the A380 have the smallest share of deliveries at 5%. These aircraft are very visible today at the World’s greatest airports, and in the future will continue to provide the most efficient way of connecting the “big points”.

NEW DELIVERIES

AFRICA

ASIA/PACIFIC

CIS

EUROPE

LATIN AMERICA

MIDDLE EAST

NORTH AMERICA

FREIGHTERS

WORLD

<table>
<thead>
<tr>
<th>Region</th>
<th>2015-2024</th>
<th>2025-2034</th>
<th>2015-2034</th>
<th>SHARE OF 2015-2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFRICA</td>
<td>460</td>
<td>657</td>
<td>1,117</td>
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</tr>
<tr>
<td>ASIA/PACIFIC</td>
<td>4,986</td>
<td>7,610</td>
<td>12,596</td>
<td>39%</td>
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<tr>
<td>CIS</td>
<td>577</td>
<td>711</td>
<td>1,288</td>
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</tr>
<tr>
<td>EUROPE</td>
<td>3,375</td>
<td>2,990</td>
<td>6,365</td>
<td>20%</td>
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<tr>
<td>LATIN AMERICA</td>
<td>1,111</td>
<td>1,399</td>
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<tr>
<td>MIDDLE EAST</td>
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<td>1,187</td>
<td>2,361</td>
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<tr>
<td>NORTH AMERICA</td>
<td>2,972</td>
<td>2,572</td>
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<td>FREIGHTERS</td>
<td>463</td>
<td>341</td>
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<tr>
<td>WORLD</td>
<td>15,118</td>
<td>17,467</td>
<td>32,585</td>
<td>100%</td>
</tr>
</tbody>
</table>

SINGLE- AISLE: 70% OF UNITS; WIDE-BODIES: 55% OF VALUE

Passenger aircraft (≥ 100 seats) and jet freight aircraft (>10 tons)

Source: Airbus GMF 2015

Very Large Aircraft Twin-aisle Single-aisle

22,900 8,100 1,600

20-year new deliveries of passenger and freighter aircraft

% units 70% 25% 5%

% value 45% 43% 12%
Demand for air travel
Although levels of growth remain different, the rebound is yet to happen in emerging economies whereas it started in early 2013 in advanced economies.

Sources: IHS Economics, Airbus

*Gross Domestic Product (year-over-year quarterly evolution)

The world’s economy increased by +2.6% in 2014, up from +2.4% in 2013 and +2.3% in 2012. 2014’s “soft” economic growth resulted from the combination of slightly better than expected growth in most developed markets (especially in the US) together with disappointing growth in some emerging economies. This trend is expected to continue in 2015, as the economic growth rebound in emerging economies is yet to happen in a meaningful way, a rebound which started in early 2013, in advanced economies.
However, the fundamentals are in place for the global economy to pick up in the short term, up to +2.8% in 2015 and 3.2% in 2016. Lower oil price, whilst maintained, and additional monetary stimulus (particularly in Japan, Europe and China) will not only support growth, but could provide the basis for some upside surprises.

Over the long term, the global economy is expected to grow steadily thanks mainly to more aggressive businesses investment, which itself is fuelled by accumulated pent-up consumption demand in developed and emerging economies. As a result, the pace of growth is projected to be strong over the next 20 years, averaging +3.2% yearly average for the real GDP and +4.3% for the international trade.

In 2014, passenger air transportation has again shown its resilience despite the Eurozone’s slow recovery, ongoing Middle East and North Africa uncertainties, the Ukraine-Russia crisis and high oil prices throughout the year (Brent yearly average at $99/bbl, down “only” 8% compared with 2013):

- +6% estimated yearly traffic growth (in RPKs)
- increase in passenger load factor estimated at 0.3 percentage point in 2014 reaching the record level of 80%, on average globally, and up to 85% for domestic US

Last year provided a much more supportive demand environment for the air freight market thanks to improvements in business confidence and a pick-up in World trade growth. This led to encouraging overall freight traffic results in 2014:

- +4.5% yearly traffic growth (in FTKs)
- increase in freight load factor estimated around 1 percentage point in 2014 (up to 46%)

Many factors can explain the strong development of the air transport over the last 40 years (more liberalisation, ticket price reduction…), but the most important has been economic growth which has allowed air transport to become affordable for many more people. As a result, one interesting ratio to consider is the relationship between economic growth and air transport growth or simply put: what percentage of air transport growth comes from what level of economic growth? Looking at this evolution over time, it appears this ratio has changed, from 3.1 in the seventies (every percent of economic growth on average throughout the decade into +3.1 percent of passenger air transport growth), down to 1.9 in the eighties, 1.8 in the nineties and 1.4 from the beginning of this century.

It is also interesting to note that the regular decrease of the air transport and economic growth ratio was suspended beyond 2010, and has in fact increased up to 2.1 since the beginning of the decade. It is still too early to draw firm conclusions, but this evolution could mean additional potential for the air transport development. One of the explanations could be the recent development of Low Cost Carriers now common globally and helping to stimulate air transport.

Another explanation could be the growing reliance of World economic growth to its private consumption component. World private consumption is expected to grow at a +3.1% compound average growth rate over the next 20 years. This means it would represent 58% of the World economy by 2034, this compares to 27% for fixed investment and 15% for government consumption.

Despite “soft” economic growth after the 2008/2009 financial crisis, passenger air transportation growth remained impressive. It is also interesting to note that the regular decrease of the air transport and economic growth ratio was suspended beyond 2010, and has in fact increased up to 2.1 since the beginning of the decade. It is still too early to draw firm conclusions, but this evolution could mean additional potential for the air transport development. One of the explanations could be the recent development of Low Cost Carriers now common globally and helping to stimulate air transport.

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Private consumption

TO SUPPORT 58% OF THE WORLD ECONOMY BY 2034

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But emerging economies have not been immune from the difficulties facing the global economy. Since the financial crisis in 2008-09 and the subsequent European debt crisis, the consumer demand on which these economies depend has substantially weakened and the sluggish global economy has produced a downward pressure on the exporters in the emerging markets.

In the past decade, a number of emerging economies have enjoyed rapid economic growth, supported by exports and investment. As international trade proliferated in the late 1990s into the new century, these economies positioned themselves as labour-intensive destinations because of their low labour costs and abundant workforces, providing a competitive advantage in becoming successful export-led economies.

The subsequent high level of accumulated capital derived from exports has been invested in infrastructure improvements, spurring greater industrialisation and increased productivity. China is often cited as the prime example of this export-led growth model, a model that has successfully contributed to an average annual GDP growth rate above 10% for the last decade.

Emerging markets TO REPRESENT 43% OF THE WORLD PRIVATE CONSUMPTION BY 2034, UP FROM 31% CURRENTLY

This reliance on consumer demand in the developed markets and the inherent vulnerability to any slump in mature economies is why emerging economies are seeking to move away from an export and investment-led growth model to one focusing on greater domestic spending. Policy makers in the emerging markets are well aware that the conventional export-led growth model used by Asian economies in the past is unlikely to be sustainable over the longer-term and that economic growth increasingly needs to come from domestic consumption.

The weight of the contribution of private consumption to the economies of emerging countries is still quite low in relative terms. For example, China’s household consumption accounts for just 36% of its GDP, while household consumption in the US, UK, Germany and Japan accounts respectively for 68%, 64%, 55% and 60% of GDP. Policy makers in emerging markets have already taken steps to adjust their growth models toward more domestic consumption-centric economies. As a consequence of this rebalancing, it is expected that private consumption in emerging markets will rise from 31% of the World private consumption currently to an estimated 43% by 2034.

Recent oil price declines (oil price halved in the six months from July 2014 to January 2015) have given consumers more purchasing power, which is expected to directly stimulate short term private consumption. This new oil price reality materialised due to the continued success of US tight oil production, OPEC’s position, and “soft” global economic growth hence refined product demand. Oil prices could potentially remain at the current relatively low levels for some time, providing geopolitical tensions remain manageable. In the very long term, the view that high oil prices are necessary to incentivise new development and replace “cheap” conventional oil production declines remains part of oil price’s outlook.
The plunge in oil prices represents a transfer from oil producer countries to oil consumers (estimated at $2.1 trillion) and is expected to support a long-awaited acceleration in global economic growth, raising real GDP growth by about a half percentage point in 2015. The big beneficiaries include the United States, the Eurozone, Japan, China, India and many oil-importing countries of Asia, Central Europe and East Africa.

However, lower oil prices translate into revenue losses for oil companies and governments in oil-producing countries. The net positive impact on the global economy reflects the tendency of oil-importing countries to spend a larger share of their “windfall” than oil-exporting countries. The end result will be a pickup in global economic growth from 2.6% in 2014 up to 3½% in 2015.

As a consequence of an improving economic outlook in 2015, airline profitability is expected to improve again in 2015 in all regions as shown into last IATA conjunction with lower oil prices, airline profitability is expected to reach US$50 billion in 2015, up from $33.9 billion in 2014 (and $25.3 billion in 2013).

The air transport industry has gone through many “shocks” over time, economic (Asian crisis in 1998, “subprime” crisis in 2008…), geopolitical (oil crisis in 1973 and 1979, gulf crisis in 1991, 9/11 in 2001…), climatic (earthquake, tsunami or volcanic eruption…) or pandemic (SARS in 2003, H1N1 swine flu in 2009, Ebola in 2014). These “shocks” impacted the economy and in some cases people’s willingness to fly, hence an impact on air traffic and air fare results on local, regional or worldwide levels. However, despite these shocks, air transport has demonstrated its extraordinary resilience over time, with none of these events having long term impact. In fact passenger air traffic has quadrupled over the last 30 years, growing at a 5.3% compound average growth rate since the 70’s. This has been possible thanks to the development of emerging markets over time and wealth becoming more evenly distributed globally. Twenty years ago, 70% of the world’s population represented less than 10% of the world’s wealth. This has evolved to around 20% currently, this share is expected to reach more than 30% over the next 20 years.

Air transport is fortunate that its benefits and structure have enabled it to weather these difficult periods. But in addition to these, it has been the people and the businesses in the industry that have always managed to find innovative ways to deliver airline services, materials, parts, and aircraft to the World, despite the challenges they faced, and doubts will continue to in the future.
Market Drivers

Air traffic forecasters use different types of indicators to explain how air traffic growth has been achieved:

- Economic, as described in the previous chapter.
- Demographic: population growth, urbanisation, and middle class development in emerging countries.
- Greater connectivity between people/regions: efficient mobility, network development, and airports capacity increase, indirectly stimulating the economy through infrastructure investments and the business they attract.
More than 3 billion scheduled and non-scheduled passengers took a flight in 2014, almost half of the World population. Around two billion of them took a domestic flight, led by the USA (~650 million) and China (~350 million), together representing almost one third of all passengers. In addition, more than a billion passengers flew internationally. The internationalisation of air transport has been made possible by a greater cooperation between countries, illustrated by the number of bilateral air service agreements between countries, which has gradually increased to more than 2,500 Worldwide by 2014.

**Impact of the China-ASEAN Air Transport Agreement on the Number of Services**

Liberalisation and globalisation have driven world traffic growth. At the regional level, higher integration of countries in parallel with the development of short-haul airlines have stimulated air traffic. This is shown for example by the multi-lateral agreements between China and ASEAN in 2010, where the number of bilateral agreements between China and ASEAN has been made possible by a greater cooperation between countries, illustrated by the number of bilateral air service agreements between countries, which has gradually increased to more than 2,500 Worldwide by 2014.

**Internationalisation and Globalisation Have Driven World Traffic Growth**

Sources: ICAO WASA database, Airbus

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**Number of bilateral air services agreements in the World**

![Graph showing the number of bilateral air services agreements in the World over time.](image)

**Sources:** ICAO WASA database, Airbus

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**Sources:** OAG (September data), Airbus

**LCC Market Share (ASK):** 18%

**78 Airport-pairs**

**2009**

**LCC Market Share (ASK):** 18%

**156 Airport-pairs**

**2014**

**LCC Market Share (ASK):** 29%

**Internationalisation has also occurred at the global level. International long-haul (>2,000 NM) traffic has grown faster than short-haul over the last ten years, to reach 30% of all international passengers.**

The United Nations World Tourism Organisation (UNWTO) recorded more than a billion international tourists in 2014, more than 50% of these carried by plane. UNWTO classifies the purpose of tourist trips in three main categories:

- Holidays, recreation and other forms of leisure (52% of international tourists).
- Business and professional purposes (14%).
- Religious reasons, health treatment and/or visiting friends and relatives (27%).

**Visiting friends and relatives (VFR), a travel category in its own right, is often thought as particularly resistant to crises, simply because people like to meet the people closest to them in person. Data analysis also confirms a large correlation between international migration and the number of air passengers in the World.**

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**Sources:** UNWTO, Airbus

**Migration data: only available are 1990, 2000, 2010, 2013. Extra/Interpolation for the other years.**

**Globalisation for People has Not Reached Its Full Potential**

The United Nations Population Division (UNPD) stated there are more than 230 million international migrants in the World, which represents around 3% of the World population. Other studies suggest this number could be even higher. A recent Gallup survey, conducted in 154 countries between 2010 and 2012, has estimated the potential number of permanent adult migrants in the World, at about 13% of the World population.

**Sources:** UNPD, Sabre GDD, Airbus

**Evolution of trade, tourism and migration**

![Graph showing the evolution of trade, tourism and migration over time.](image)

**Sources:** UNWTO, Airbus

The globalisation of human beings is not as complete as the globalisation of merchandise and capital. Significant improvements in terms of international mobility may be achieved in the future, to the benefit of countries’ economies and air transport. As an example, the facilitation of visa procedures between China and the USA has stimulated air passenger traffic between the two countries.
The largest metropolises have become “global cities”, the traditional destination for international migrants, and where international community areas develop. Among the 91 current and future aviation megacities, cities visited by more than 10,000 international long-haul (≥2,000 NM) air passengers per day, data shows that 80% of them had positive net migration rates in 2014 (domestic and international migration combined). Urban agglomerations are an example of more efficient societies, provided negative externalities such as congestion and pollution are efficiently managed: they concentrate activities in a relatively small area, provide economies of scale, lower transportation costs and enable the dissemination of goods and services.

One variable that is used to describe aviation growth is population. Not a surprise perhaps, the more people there are the more potential air passengers. Between 1950 and today, the World’s population almost tripled, now totaling more than seven billion people. Due to a demographic boom, Asia-Pacific has been the biggest contributor, accounting for more than 50% of global population growth between 1960 and 2010. Due to productivity improvements in the agricultural sector leading to a rural exodus in many countries, but also more recently thanks to organic growth of cities. Increasing urbanisation has been observed globally over the last 70 years: 30% of the World’s population lived in urban agglomerations in 1950, with more than 50% today. In their baseline scenario, analysts from the United Nations Population Division expect global population to increase by more than 30% to 2050; growing at a slower pace than in the past, as most of the regions have now started their demographic transition. The only exception to this rule is Africa, whose young and quickly growing population will more than double by 2050, reaching 2.4 billion, and contributing 50% of the World’s population growth between 2010 and 2050. They also project urbanisation to continue, with two thirds of the World’s population expected to be living in urban agglomerations by 2050. Asia-Pacific will remain the main contributor as many of its countries have relatively low levels of urbanisation today, accounting for more than 50% of the World urban population growth to 2050, followed by Africa, contributing by more than 30%.

A HIGH GROWTH IN NUMBER OF CHINESE VISITORS TO THE USA IN THE RECENT YEARS
Sources: UNWTO, USA Department of State, Airbus

AVIATION MEGA-CITIES STILL ATTRACTIVE FOR MIGRANTS
Domestic and international migrants included.
Sources: Oxford Economics, Airbus

Visitors from China to the USA
x3
2009-2012

Net migration volume
(thousands)

Non-immigrant visas issued
Share of city population

Net migration in current and future aviation megacities, in 2014
Urbanisation will continue to accompany air traffic growth. New potential air transport consumers from the middle classes will emerge from urban agglomerations, where workers are able to earn higher wages. Analysis of income distribution in aviation mega-cities compared to the World average confirm that the bigger the city, the larger the potential for consumption.

High-quality telecommunications, transport and energy infrastructure are necessary for urban agglomerations to fully benefit from the economic potential of urbanisation, to efficiently harness globalisation and to accommodate increasing international mobility. While the infrastructure in emerging markets is still lagging behind mature markets, they are rapidly catching up. On a scale from 1 (low quality) to 10 (high quality), the rating of advanced countries has been stable at around 9 over the last 15 years, the rating of emerging countries increased from 4 in 1998 to 6 in 2013, and is expected to reach 7 around 2020.

In the case of air transport, a lack of good airport infrastructure has at times prevented some cities from having access to the full benefits brought by aviation, not only emerging but also some advanced countries. Airport modernisation will be necessary to accommodate traffic growth in a sustainable way. In a recent study, Airbus estimated the airport capacity of more than 300 selected airports in Europe and in a number of emerging countries. From this it could be seen that a significant number of airports are already at more than 60-70% of their maximum capacity, already generating issues in terms of flight scheduling, especially during peak hours. Assuming that airport capacity remains the same until 2020, the GMF forecasts that in the region of 30 airports may surpass the 100% threshold, with 50 airports at more than 80% of their capacity.

It is important to point out however, that improvement in Air Traffic Management (ATM) systems have, up until now, allowed airports to surpass the theoretical 100% capacity utilisation in the past and we believe that advances in Air Traffic Management and aircraft operations increasingly facilitated by technology on board the aircraft over time will also help.

MORE THAN TWO THIRDS OF THE WORLD’S POPULATION WILL BE URBAN IN 2050

Sources: UN Population Division, Airbus

THE WORLD’S POPULATION IS EXPECTED TO REACH 9.3 BILLION IN 2050

Sources: UN Population Division, Airbus

World average
Aviation mega-cities

Income distribution in selected areas

The bigger the city, the larger the potential for consumption

Share of total households earning more than each income threshold.
Aviation mega-city: receiving more than 10,000 international long-haul passengers daily.
Sources: Oxford Economics, Airbus

Infrastructure rating* in advanced and emerging regions (1=low, 10=high)

Infrastructure quality in emerging countries has increased

*Based on 35 emerging and 25 advanced major countries
**Aggregating individual countries rating, weighting by GDP
Sources: EIU, Airbus

Airports capacity* utilisation in 2011 and 2020

Congestion slows the pace of growth at several airports

*2011 estimated capacity in more than 300 airports in several emerging countries and Europe
**Reports ranked by 2020 capacity utilisation
Sources: Airbus Market Research and Forecasts
Network and traffic forecast
Over the past ten years air traffic has continued its strong growth. In spite of the major financial crisis in 2008, available seats increased by 57%. In 2014, the growth rate for passenger traffic was 6%, one of the strongest periods of growth since the beginning of the decade.

More services
SINCE 2004
+31%

Despite a major crisis in 2008, airlines have offered more services to their customers. Note: as of September
*Service is defined as a new airport pair or a new airline operating an existing airport pair
Sources: OAG, Airbus

Over this past ten years air traffic has continued its strong growth. In spite of the major financial crisis in 2008, available seats increased by 57%. In 2014, the growth rate for passenger traffic was 6%, one of the strongest periods of growth since the beginning of the decade.

More traffic, more services
To support the increase in demand, airlines around the World have responded by developing their networks. Service was extended to new airport pairs, and more airlines started flying on existing routes. Combined, services offered to air travellers have expanded by 31 percent, nearly a third, since 2004.

Most of this growth has come from the 26 percent increase in the number of city pairs connected by air, while additional airlines on existing routes contributed five percent.
According to our forecast, by 2034, almost 8,700 new services will be offered to passengers compared to today. These new routes will represent 18% of total RPKs in 2034, with the majority of growth therefore developing on today’s routes.
In parallel to the development of air services, airlines are increasingly using larger aircraft. Over the past ten years, the number of seats per flight has grown by 20 percent, the highest ten-year increase since the seventies. Average aircraft size varies greatly by an airline’s region of domicile. Middle Eastern carriers on average use the largest aircraft, with an average 208 seats per flight. At the other end of the spectrum with significant domestic and intra-regional flying are North and Central America with 102 and 88 seats respectively.

Air traffic congests the skies, particularly at hubs like Heathrow. In 2014, five more urban centres became Aviation Mega-Cities – aviation hubs with more than 10,000 long-haul passengers daily. The largest is London, with 120,000 passengers – the only city today handling more than 100,000 long-haul passengers. Dubai, the main hub of the Middle East is second largest, with 98,000 passengers. However, 20 years from now, the ten largest aviation mega-cities will have daily traffic of over 100,000. Together, these ten cities will transport 1.5 million long-haul passengers each day.

The trend towards larger aircraft is a result of airline efforts to become more productive through the transportation of passengers at a lower cost per seat. Increasingly, it is also a question of congestion, as more airports reach their limits in terms of slot capacity and air traffic management also becomes a constraint. At these airports, an increase in traffic is only possible by using larger aircraft in the short to medium term. For example at Heathrow, one of the busiest airport in the World, there was an average 10,000 monthly landings per runway in 2014.

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The next five cities are all in Asia. The largest Chinese hubs, Shanghai and Beijing will handle four times more traffic and it is estimated that they will become larger than London today. In 2034, there will be a total of 91 aviation mega-cities, almost twice as many as in 2014. Over four million long-haul travellers will travel to, from, or through these cities every day.
MORE PASSENGERS, MORE AVIATION MEGA-CITIES

Source: Airbus

10,000 230,000

2014

2034

MORE PASSENGERS, MORE AVIATION MEGA-CITIES

Source: Airbus

10,000 230,000
PASSENGER TRAFFIC

A major enabler for economic development, air transport is also robust and traditionally recovers quickly following downturns. Due to the value people place on its benefits it is also a growth industry. Measured in RPKs, passenger traffic has increased by a third since the 2008 financial crisis, with an average annual growth rate of 5.8% over the last five years. Momentum continued in 2014, with traffic increasing by 5.9%, well above the long term trend.

Air transport is a growth market
62% GROWTH OVER THE LAST TEN YEARS

AIR TRAVEL HAS PROVED TO BE RESILIENT TO EXTERNAL SHOCKS

Sources: ICAO, Airbus GMF 2015

RPK = Revenue Passenger Kilometer
Passenger air traffic has doubled every 15 years since the early eighties. While the World endured various crisis episodes, difficult periods for the industry and those in it, the long term growth trend was quickly re-established. Today, solid growth drivers for the air transport industry are in place, with at its forefront the economic dynamism of emerging countries. With this underlying strength, demand is set to continue and is even expected to double again in the next 15 years. The Airbus 20 year forecast shows an expected average annual growth rate of 4.6%. This number is the result of a strong first decade at a 5.2% average growth rate, with a slightly lower rate for the second decade, at 4.0%. However, this second decade still delivers nearly 25% more new traffic in absolute terms than the first 10 years. The growth of international traffic will be slightly higher than the growth on intra-regional and domestic flows. As a result, international long-haul traffic will still represent the largest share of the demand for air travel, accounting for 45% of the World RPKs.

**Air Traffic Forecast**

**Air Traffic will Grow at an Average Annual Rate of 4.6% over the next 20 Years**

Sources: ICAO, Airbus GMF 2015

**ICAO total traffic**

2014-2024 +5.2%

2024-2034 +4.0%

2014-2034 +4.6%

**Airbus GMF 2015**

**International Long-Haul**

+4.7%

**Domestic**

+4.5%

**RPK = Revenue Passenger Kilometer**

**Share of the World traffic by type of flow (RPKs)**

Emerging - Emerging +6.6% 36%

Advanced - Emerging +5.0% 34%

Advanced - Advanced +2.6% 43%

Emerging - Advanced 25%

Over the next twenty years, whilst traffic to and from the “advanced” aviation markets will continue to grow, traffic to and from today’s emerging markets will grow strongly both in terms of actual traffic and its share. In 2034, more than 70% of the RPKs will be flown from, to and between emerging regions.

**Long-Haul demand leads the market**

**International Long-Haul Traffic will continue to represent about 45% of the World RPKs in the next 20 years**

**EMERGING ECONOMIES DRIVING DEMAND GROWTH**

**Emerging Regions will account for the largest share of origin and destination traffic worldwide**

2034
**NEW MARKET STRUCTURE**

Relative convergence theory applies perfectly: the propensity to travel in emerging regions will progressively catch up with advanced economies and market size between the regions will converge towards the demographic share between regions. The pace of this process depends on the economic performance and the level of liberalisation in emerging regions. Unsurprisingly, Asia-Pacific will become the largest market by 2034, responsible for 40% of the World RPKs.

**LARGE MARKETS ARE FLOURISHING**

In 2034, sixteen out of the twenty largest origin and destination traffic flows will involve emerging regions. Domestic PRC traffic will become the largest market, growing nearly fourfold by 2034. Some smaller markets will experience staggering growth: the domestic Indian market for example will grow nearly sixfold over the next twenty years.

**Half of the 2034 Top Twenty Traffic Flows Will Involve Asia-Pacific**

**DOMESTIC PRC WILL BE THE LARGEST O&D TRAFFIC FLOW IN 2034**

Source: Airbus GMF 2015

**Flying by Numbers**

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**Evolving Structure of the Air Transport Market**

Sources: Sabre G200, Airbus
LCCs will continue capturing market share

In 2034, LCCs will fly 21% of the world RPKs

**LCC TRAFFIC GROWTH**

Low cost carrier (LCCs) expansion is another aspect of the markets structure that will evolve. Low cost carriers are today present at a global level, at times with differing models and market penetration levels. Simple fleet structure, fast turnaround time, rationalised structural costs and a focus on ancillary revenues, enable LCCs to acquire market share and importantly open new routes and markets. LCC presence in a market stimulates growth. Another independent variable that can be used in forecasting traffic is airline yield, which in turn is driven by ticket price, a key tool in the LCC competitive tool box.

At a worldwide level, the rapid expansion of LCCs will potentially result in a market share of 21% in 2034, four points above the current level. LCCs are a key driver of structural change, and LCC penetration is the highest in the intra-regional market in Europe (nearly 40% ofASKs), domestic markets in Emerging Asian countries (nearly 60% ofASKs) and domestic markets in the Indian Sub-continent (nearly 65% ofASKs). LCCs will continue capturing market share, making them the fastest growing airline type between 2014 and 2034.

**LOW-COST CARRIERS EXPECTED TO BE THE FASTEST GROWING AIRLINES BETWEEN 2014 AND 2034**

Sources: Sabre, Airbus GMF 2015

**GMF 2000 LONG TERM FORECAST IS STILL IN LINE WITH OUR LATEST FORECAST**

The aim of the Airbus GMF is to forecast the long-term evolution of the demand for air transport. Short-term downside and upside market variations due to potential future crisis episodes or favourable conditions are not directly visible in our results. However, we base our analysis on extensive historical data, which includes all of the difficulties experienced in the past. As a result of this and the methodology adopted, the long-term trend we forecast in 2000 is in line with our latest forecast, despite the turbulence faced in 2001 and 2009. Clearly the traffic and revenues lost during these difficult periods are an issue for the industry, and businesses need to make sometimes difficult decisions to get through them effectively. However, demand for air travel is such that traffic has been seen to recover to the long-term trend, even to that projected more than a decade ago.
Demand for passenger aircraft
Aircraft Demand

Once passenger traffic demand has been determined through network development models and detailed traffic forecasts, this must be turned into a forecast of the types of aircraft, by seat segment, which will be needed to meet passenger and airline demands over the coming years. Other dynamic factors also must be considered these include aircraft replacement trends, developments in productivity (seats, speed and utilisation). These trends will help to determine aircraft demand. The good news is the historical trend in these areas have been positive helping to make the civil aviation industry increasingly efficient, important as the industry continues to grow in the coming years. Average aircraft size for example is increasing, simply taking the average capacity per flight over time, aircraft size has grown on average from 139 seats to over 170 seats since the early 1970’s. A second period of average aircraft size growth is beginning with today’s backlog, airlines switching to larger variants from that originally ordered and manufacturer product development decisions, making it clear the future is larger aircraft from single-aisle types to twin-aisles. Whilst there will be new route opportunities, indeed thousands of opportunities are indicated from our analysis, by 2034, 70% of the global network growth and 80% of traffic will be centred on today’s routes.

Load factors have grown 17 percentage points over the same period to a yearly average of almost 80%, how many cars do you see with four of the five car seats filled. Airport connectivity has almost doubled, airport movements have more than doubled. Global access to aviation has never been greater. Whilst all in the industry are acutely aware that a balance must be met between the socio economic benefits of aviation verses the environmental cost, the more than 30% reduction in fuel burn per ASK in the last 15 years is evidence of or focus on meeting our widely stated environmental commitments for the future.

Sources: OAG, Ascend, ICAO, Airbus GMF 2015
AIRCRAFT SUPPLY

Having defined demand, most forecasters must then also consider supply, i.e. what aircraft type will actually meet this demand. This view is commercially sensitive as it defines an organisation’s view on market share and even potential new product offerings. Due to this sensitivity this view is purely internal, it is clear that the level of new product development seen in the last 10 years, the quality of those products and their respective significant backlogs will mean that in large part demand in the next 20 years will be met by these products and/or their derivatives, either as new deliveries or “second hand” re-marketed aircraft. Single-aisle and widebody products cover a staggering spectrum in terms of both capacity options and range of operation. Manufacturers have continued to strive to meet the individual requirements of airlines and their passengers. For the single-aisle these aircraft range from 100 to 240 seats, with the A321 offering this highest seating configuration, with the possibility on the range side of flying 4000nm. For the wide-body types there is operational overlap with the single-aisle, with lower seating limits around 200 seats increasing to 600 or even higher with the A380. This overlap has developed as the capability of both segments of today’s aircraft have grown, leaving already seamless coverage between the single-aisle and widebody markets.

THE IMPORTANCE OF THE “BIG POINTS”

It is expected that long-haul traffic will further concentrate around Aviation Mega-Cities. For example, since 2009 more than 80% of the total traffic to/from within Latin America has passed through just 10 airports and in Asia-Pacific the top 20 largest airports are responsible for almost 50% of the total traffic. At a global level today there are 47 Aviation Mega-Cities (AMCs) who account for more than 50% of long-haul passengers. As a result Very Large Aircrafts (VLA) like the A380 have become a common tool to relieve the effect of increasing airport congestion.

WIDE-BODIES OFFER 10% OF SEATS OPERATED BELOW 2,000NM

Note: September 2014
Sources: OAG, Airbus

Aviation Mega-City to Aviation Mega-City
Aviation/Mega-City to Secondary City
Secondary City to Secondary City

Monthly international long-haul passengers (Millions)

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These Aviation Mega-Cities not only represent centres of air traffic but are also significant centres of wealth. According to IHS Global Insight, GDP per capita in AMCs is four times larger than the World average. This difference is even more evident within emerging economies where urbanisation is a key element of growth.

% Difference AMCs vs regional average

THE BIGGER THE CITY, THE WEALTHIER THE POPULATION

Sources: Oxford Economics, UNPD, IHS Global Insight, Airbus GMF 2015
As a result of this concentration of wealth, unsurprisingly the number of premium passengers (first and business class) is higher than for other routings. For example, in 2014 14% of passengers between AMCs were premium passengers, whereas for routes not including AMCs, this figure was just 8%.

As well as difference between aircraft segments there is also regional variation. Comparing the share of used aircraft in each region shows that airlines in Europe, the CIS and Africa have been more active in taking multi-owned aircraft. North America, for example, has a smaller share, possibly indicating a tendency to keep their aircraft longer.

**Routes Between Aviation Mega-Cities Have Higher Percentages of Premium Pax**

Cites with more than 10,000 daily passengers, Long-haul, flight distance >2,000nm, excl. domestic traffic

**Number of Operators during 20 First Years in Service Has Increased Over Time**

Source: Ascend, Airbus

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**Not Every Aircraft Delivered is New**

A newly delivered aircraft can expect to have several owners over its 20 to 30 years life. It might be owned by several airlines, potentially from different continents, potentially with different business models. It might also be owned by leasing companies that today manage a significant share of the current fleet in service. Examining the current fleet in service, roughly one third of twin-aisle aircraft have an operating lease. This share is even higher for the single-aisle, almost half of these aircraft are owned by lessors.

As well as owners, their role may change during its life, converted for example into a freight or private/corporate role. Understanding the market and formulating future demand also needs an understanding of the aircraft aftermarket, a market that like other elements of our industry is evolving. For example 30 years ago an aircraft averaged two operators during the first 20 years of its life. Today, an aircraft averages three operators.
Demand by region
The region will be a major beneficiary of the decline in oil prices, for as long as they last, with for example China, Japan, India, and South Korea major net importers of oil. Weakness in prices of minerals and other commodities could however, less positively affect others in the region. Asia’s economic performance remains very dependent on exports, but domestic sources of growth, particularly private consumption, are expected to play a larger role in the coming years. Among emerging market regions, Asia-Pacific, will continue to have high economic growth. As in past, this is mainly due to the region’s combination of openness to trade, high domestic saving rates, and a relatively well-educated and disciplined labour force. Thanks to these favourable factors, Asia-Pacific will continue to attract the bulk of global foreign investment flows heading to emerging markets. The region is also destined to become the World’s dominant manufacturing centre and the main consumer of non-oil primary commodities. The longer-term outlook for Asia’s potential growth depends crucially on the region’s ability to push through macro-economic policies aimed at boosting consumption and lowering savings rates. Asia-Pacific will continue to lead World economic growth, both in terms of real GDP with an average of 4.5% per year and in trade with an average of 5.3% per year, according to forecasts.

Since the ‘90s, immigration within Asia-Pacific has grown rapidly, particularly from less-developed countries with greater labour surpluses to fast-growing newly industrialising countries. According to the United Nation (UN) data bank, there were almost 65 million immigrants from Asia-Pacific in 2013, of which 55% have moved intra-regionally within Asia-Pacific, 18% to North America and 16% to Europe. Likewise, according to World trade organisation (WTO) 43% of Asia-Pacific’s total trade in 2013 comes from within Asia-Pacific, 25% from the Middle East and another 22% from North America. Since both Trade and immigration are important drivers of air traffic, 55% of Asia-Pacific’s total air traffic in 2014 was within Asia-Pacific. Intra-regional traffic will gain further importance in the next 20 years, reaching 60% by 2034.
In addition to its vast historical and cultural diversity, countries in Asia-Pacific are also at various levels of economic growth. While, Australia/New Zealand and Asia developed countries will grow at an average rate of 1.5% and 2.9% per year respectively. Asia emerging, PRC and the Indian sub-continent will become the drivers of growth in the region, each forecast to grow at an average rate of 4.0%, 6.7% and 5.9% per annum respectively.

Correspondingly, the rate at which air traffic has grown as well as the contribution of each sub region to Asia-Pacific’s total traffic has changed over the past 10 years. For instance, while, “Asia developed” delivered 39% of the total traffic to/from/within Asia-Pacific in 2004, today it accounts for 28% of the total traffic. Conversely, PRC has increased its share of the region’s traffic from 23% in 2004 to 31% in 2014. Airlines from PRC have increased market share from 25% to 36%.

Asia-Pacific has experienced various levels of growth in low cost operations in recent years. The Indian subcontinent and Asia emerging LCCs have captured close to 65% and 60% of the total domestic traffic respectively, the market share of LCCs in Asia Developed and Aus/Nz have remained below 25%.

LCC New operations in Asia Emerging have the benefit of less incumbency from existing airlines, benefiting from the growth in new flyers and developing liberalisation. On the other hand, within or between developed countries, the gap in terms of product offering and business models between legacy carriers and LCCs has narrowed in recent years. The PRC however is an exception to this trend, where LCCs have captured above 10% market share intra-regionally and less than 5% domestically. There appears therefore to be opportunities for further development in LCC operations from, to, and within China, this would also serve to increase the connectivity between growing population centres within China and with the rest of the region.
India’s economy has accelerated quickly in the past two decades, with this evolution also evident in the spending power of its citizens. According to Oxford Economics, real average household disposable income has more than doubled since 1980 and it will continue to grow. With rising incomes, household consumption will further increase as will the number of Indian middle classes, estimates suggest the number of households with discretionary income (above $7,500 per annum) at 66 million households today. This number will treble to 180 million households by 2030. Households with disposable income of above $20,000 per year will represent 67 million which will be larger than the population of France.

As the size of the middle income class grows, so will demand for air travel. The Airbus GMF forecasts passenger traffic to / from India to grow five fold in the next 20 years.

China’s three decades of rapid economic growth has moved millions of people out of poverty, and has established a thriving middle class. According to Oxford Economics. In 2014, China reported 90 million households with earnings above $20,000 per year, this is not dissimilar to the US where the number is 110 million households. By 2024, the number of households above this income bracket will grow three fold and will represent 300 million households.

The various regions in China have contributed differently to this economic boom. The Eastern regions have witnessed most of the economic growth in the past, whereas the highest growth rate in the future will be in the Western region. For instance, Guangdong, Jiangsu and Shandong have reported a combined 1,630 billion USD in 2014, which represents 30% of China’s total real GDP. However, in terms of growth rates Western regions will experience higher rates within the next decade. This movement of economic activity westwards should be mirrored by aviation development, as cities in the centre and west grow and need improved transportation and connectivity with the rest of China and Asia. Aviation has demonstrated in the past that it is ideally suited for this purpose, being more cost and land effective than other mass transportation modes, not to mention the benefits of speed which are unmatched.

Special Focus on China

CHINA DOMESTIC TRAFFIC IS MOVING WESTWARDS
Sources: IHS and Airbus

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**Number of Households (in millions) earning above $20,000 annually**
- 2014: 114
- 2020: 180
- 2030: 300

**INDIAN MIDDLE INCOME TO GROW TO 174 MILLION HOUSEHOLDS**
Sources: Oxford economics, Airbus

**~300 MILLION HOUSEHOLDS IN CHINA WILL EARN ABOVE $20,000 A YEAR**
Sources: IHS and Airbus

**Results**

**RPK traffic growth from/to Asia-Pacific by region**
- Asia-Pacific: 5.9%
- Middle East: 6.3%
- Africa: 7.3%
- Latin America: 5.9%

**Economy**
- Real Trade: 5.3%
- Real GDP: 4.5%

**Traffic**
- Intra-regional & domestic: 6.0%
- Inter-regional: 5.1%
- Total traffic: 5.6%

**Fleet**
- Fleet in service: 4,637
- New deliveries: 12,596
- 20 year new deliveries: 12,596

**New deliveries by segment**
- Single-Aisle: 8,329
- Small Twin-Aisle: 2,554
- Intermediate Twin-Aisle: 1,089
- Very Large: 624
ECONOMIC OUTLOOK

Whilst the Eurozone economy has had difficulty gaining momentum, consumer spending is accelerating. This together with some continued monetary stimulus through quantitative easing, euro depreciation, expanding export markets and low oil prices will all help support growth. In Central Europe, beyond near term deleveraging and structural reform priorities, it could be expected that a renewal of capital inflows, a rebound of exports and more robust domestic demand will help economic developments here.

NEEDS LEADING TO RESILIENCE

Air transport is a core industry in Europe. In 2014, it accounted for 4.1% of the region’s GDP, supporting more than 12 million jobs, according to a recent ACI report. Europeans value air travel, inbound tourism is massive, and the industry adapts dynamically to the region’s diversity. All of these factors explain the resilience of European air transport. Despite stuttering economic performance in the Eurozone, ACI reported a 5.4% growth in 2014 in passenger traffic at Europe’s airports.

European airlines have proven to be creative in fostering growth over the past 15 years. Dynamic Low Cost Carriers, Global mega-airlines and their alliances, with Europe now also benefiting from the emergence of various hybrid airline models. Traditional Full Service Carriers are creating subsidiaries with optimised cost structures, to appeal to budget travellers. Low Cost Carriers are adjusting their offer, choosing to refocus operations on primary airports, offering assigned seats and an increasing choice of “à la carte” services. Hybrid carriers are looking for the sweet spot, offering various levels of service; from the traditional, all inclusive travel to the minimum budget offer. In most cases, an efficient fleet and agile operations are the basis for profitability.

EVOLVING BUSINESS MODELS SUPPORT GROWTH

September Operations

Sources: OAG, Airbus GMF 2015

Flying by Numbers
Thanks to its geographic positioning, strong tourism attractiveness and importance in the global economy, Europe leads the long haul market. 60% of the World’s long haul flights (over 6000 km) depart or arrive in Europe. It can only be expected that, as social and economic links between Europe and the emerging markets, the already extensive aviation network will grow, providing more opportunity to airlines both within the region and beyond.

DIVERSITY OF THE EUROPEAN MARKET

Europe’s average propensity to travel in 2014 was 1.2 trips per capita (US standing at 1.6 trips per capita). This figure hides a significant disparity of the propensity to travel across European countries. Many factors explain this diversity, such as the countries wealth, their geographical location, the dependence of their economy on international business, the development of the low cost carriers. The people of Western Europe for example are benefiting from aviation to a greater extent than in Central Europe, with respective propensities to travel at 1.4 as compared to 0.4 trips per capita. Most of the European countries that present a lower maturity of the air transport market are experiencing robust economic growth. Over the next 20 years, we forecast that the passenger traffic from/to/within the region will grow at a yearly average rate of 4.6% in Central Europe, and 3.3% in Western Europe.

A GIANT IN THE LONG HAUL MARKET

Thanks to its geographic positioning, strong tourism attractiveness and importance in the global economy, Europe leads the long haul market. 60% of the World’s long haul flights (over 6000 km) depart or arrive in Europe.
DIVERSITY OF THE EUROPEAN AIR TRANSPORT MARKET: PROPENSITY TO TRAVEL

Notes: Passengers originating from respective country. Bubble size proportional to country population. Sources: GDD, IHS Economics, Airbus.

Propensity to travel

IN 2014, ON AVERAGE EACH EUROPÉAN TOOK 1.2 TRIPS

Spain
Germany
UK
France
Turkey
Italy
Bulgaria
Czech Rep.
Poland
Hungary
Slovakia
Romania
Norway
Switzerland

2014 real GDP per capita

Heart of international tourism

EUROPE CONCENTRATES NEARLY HALF OF INTERNATIONAL TOURIST ARRIVALS

EUROPE, A FOCUS FOR INTERNATIONAL TOURISM

Tourism is a major driver for European international traffic. As reported by the UNWTO, Europe attracted 588 million visitors in 2014, a 4% increase versus 2013. This represents nearly half of international tourism’s total volume.

Whilst three quarters of the visitors are concentrated in Western and Southern Europe, Northern European countries have experienced a solid 6.9% growth in 2014.

Share of international tourists arrivals

EUROPE WELCOMED MORE THAN 500 MILLION TOURISTS IN 2014

Note: 2014 estimates from UNWTO. Sources: UNWTO, Airbus QAT 2015.

O&D traffic growth forecast

CENTRAL EUROPE WILL HELP DRIVE THE REGION’S GROWTH

Results

RPK traffic growth from/to Europe by region

Europe 2.9%
CIS 4.6%
Asia-Pacific 4.4%
Middle East 4.6%
Africa 4.7%
Latin America 3.5%
North America 2.8%

Total RPK traffic growth

Real GDP

1.7%

Real Trade

3.4%

Traffic**

Total traffic

3.6%

Intra-regional & domestic
2.9%

Inter-regional
3.0%

Fleet

Fleet in service evolution

Fleet size*

20 year new deliveries

6,365

Beginning 2015

2034

New deliveries

5,052

Fleet in service

In 2015

4,093

In 2034

7,208

In 2034 Detur**

3,516

Replacement

3,250

Stay in service

& remarketed

843

Single-Aisle

787

Intermediate

370

Very Large

156

Real GDP**

3.4%

Intra-regional & domestic
2.9%

Inter-regional
3.0%

Fleet in service evolution

Fleet size*

20 year new deliveries

6,365

Beginning 2015

2034

New deliveries

5,052

Fleet in service

In 2015

4,093

In 2034

7,208

In 2034 Detur**

3,516

Replacement

3,250

Stay in service

& remarketed

843

Single-Aisle

787

Intermediate

370

Very Large

156

* Passenger aircraft ≥100 seats ** 2014-2034 CAGR
ECONOMY

Consumer spending sustained by strong employment growth, improved household finances, low gasoline prices, housing market and capital expenditures recovery have helped drive US economic growth acceleration. Amongst mature advanced economies, North America will remain the growth leader thanks to a combination of favourable factors including abundant natural resources, highly developed financial institutions, rapid immigrant absorption, huge market size, science and technology leadership, and a tremendous capacity for innovation and entrepreneurship. US real GDP growth is forecast to average 2.5% per year in the 2014-2034 period, with greater business fixed investment and R&D spending offsetting the slowdown in labour force growth. By 2034, North America will still account for 21% of World economy (in real terms).

OUTSTANDING FINANCIAL RESULTS

North American airlines experienced their third consecutive year of increased profitability. Consolidation and lower fuel costs have contributed to record financial performance in 2014, accounting for 60% of the $19.9 net profit achieved worldwide. This represents more than $14 of net profit per passenger, almost double compared to 2013.

North American airlines share of worldwide profit 60%

2014 net profit
After decades of growth of the North American fleet in service in both single-aisle and twin-aisle segments, a decrease was observed during the 2000’s - a decade characterised by significant adverse events such as 9/11 or the 2008 financial crisis. During this period airlines applied strict capacity control to their operations to see them through these difficult periods. With the return of profitability since 2010, together with a favourable economic environment, a new era has begun with the increase of the number of single-aisle aircraft and the stabilisation of the number of twin-aisle servicing the market. Together with positive developments in fleet size, there is also a trend towards the rejuvenation of the fleet, however, at the end of 2014, the average age of single-aisle and twin-aisle aircraft in the fleet is still around 12 and 15 years respectively against World average around 9 and 10 years. As a result, 50% of the North American fleet is aged 13 and above, a driver for the fleet replacement activity we have been witnessing in recent years is likely to continue.

Solid economic perspectives, which stimulate business trips and purchasing power, together with a traditionally high propensity to travel will further highlight the North American market as one of the most important in the World. Tourism and immigration will also play an important role in that growth. In recent years more people have come to North America to study, work or visit friends and relatives. International tourist arrivals, for example, jumped by more than 8% in 2014 with around 120 million people coming to the region (including Mexico according to UNWTO definition of North America). With the real potential for improved relationships with Cuba, more new inbound or outbound tourists can be expected with this country in the next years.

Notes:
- Passengers originating from respective country
- Bubble size proportional to country population
- Nonlinear regression weighted by country population
- Sources: Sabre, IHS Economics, Airbus

 Unsurprisingly the region has a high propensity to fly

Notes: As of end year. 100-seater and above
Sources: Ascend, Airbus
The domestic US air transport market, the largest single market today, will remain enormous and is forecast to be the second biggest flow in the World with 90 billion RPKs by 2034. Traffic between the US and China is forecast to be the most dynamic of the North American regions flows, with an average yearly growth of 7.5%. More concretely, growth at this level doubles the traffic every decade... some might say awesome. Traffic between Canada and China will also grow at an impressive pace of 6.7% per year over the next 20 years. We forecast that over the next 20 years more than 650 million additional passengers, more than the entire population of the US, will take off or land in North America, representing a 3.4% increase in RPK per year.

NEW DELIVERIES

The GMF estimates that 5,544 new deliveries will be needed to replace a fleet older than the World average (3,631 aircraft) and to meet traffic growth (1,913 aircraft). Deliveries will comprise 4,733 single-aisle, 776 twin-aisle and 35 very-large aircraft. With their recent return to profit, North American airlines are ideally positioned to play the starring role of the always promising North American story.

2014 international tourist arrivals +8.2%
The region’s medium-term economic outlook remains supported by its substantial petroleum resources, close proximity to energy-hungry Asian economies, growing tourism potential and a strategically important geopolitical location. It is expected oil producers will continue to address their oil dependence by fostering development and activity in the non-oil sectors. Over the longer term, projections indicate real GDP growth for the region averaging 3.8% per year, clearly above the forecast World average growth of 3.2% over the next 20 years.

Air transport has been both a major driver and indicator of the growing importance of the Middle East in the global economy, also linking its main economic centres to the rest of the World. The extraordinary growth in both business and leisure passengers reflects the dynamism of the region, proving its success in diversifying beyond the energy sector and increasing its global footprint.

Over the past ten years, Middle Eastern airlines have spearheaded growth in the region. They have extended their presence to five continents, enabling air traffic to grow twice as fast as the economy. Since 2003, the capacity in terms of available seats has quadrupled to over 400 billion ASKs. Unprecedented network development has created an air transport network in which Middle Eastern cities have become major hubs, linked to aviation mega-cities around the World.
The development of air traffic in the Middle East is unique – it is the only region in the World where the twin-aisle fleet is bigger than the single aisle.

This aircraft capacity has been a key enabler of airline growth in the region in recent years. Long-haul traffic has been crucial for the development of Middle Eastern carriers. Since 1995 the share of long haul traffic has increased from half to more than two thirds in 2014. Data shows that the strategic focus on this segment of the market was a resounding success: long haul traffic has been growing at 11 percent over the past 20 years, outperforming short haul by on average five percentage points.

Such high growth is enabled by a large proportion of connecting traffic. Middle East carriers have increased their share of connecting traffic over the past five years from 28 to 34 percent. Compared to other regions where connecting traffic represents less than 17 percent, Middle East and North America stand out with about a third of passengers connecting in the region.

It is also interesting to note that the share of connecting traffic passing through the Middle East, i.e. not starting or finishing their journeys there, is just 19% of the region total origin and destination traffic, especially as the perception is that the Middle East is just one large hub. Looking more deeply, just 15% of total Middle East O&D are in this inter regional “transiting” category for long haul passengers, with the remaining 5% on short-haul journeys.

**Destinations Increasingly Global**

Sources: OAG (September of each year), Airbus

**Share of Connecting Traffic by airline domicile**

Sources: Sabre, Airbus

**Middle East Airlines ASK (billions)**

Note: September ASK for each year.

Sources: OAG, Airbus

**Long-Haul Traffic Growth at the Heart of Growth**

Sources: OAG, Airbus

**Share of Long-Haul ASK in 1995**

47%

**Share of Long-Haul ASK in 2014**

69%

**The Middle East Has the Largest Share of Connecting Traffic in the World**

Sources: Sabre, Airbus

**Share of Connecting passengers among passengers transported by Middle East carriers:**

34%
Middle East Airlines
SHARE OF PASSENGERS TRANSITING AND NOT STARTING OR FINISHING THEIR TRIP IN MIDDLE EAST
19%

A MIX OF CONNECTING AND DIRECT ORIGIN AND DESTINATION TRAFFIC
Note: as of 31/12/2013
Sources: Ascend, Airbus

North America
31%

Middle East
19%

Africa
6.6%

Latin America
7.7%

Asia-Pacific
6.3%

Europe
4.6%

CIS
6.6%

Middle East
5.8%

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The regional economic outlook for Latin America and the Caribbean suggests modest growth in 2015, and acceleration in 2016. Lower oil prices are good news for Chile, Uruguay, and Caribbean and Central American nations, but not necessarily for oil exporting countries in the region. Compared with the pre-Asian crises years when the region also posted strong economic growth, the macro-economic fundamental conditions have improved substantially.

Latin America & Caribbean Economic Outlook Positive
Sources: IHS Global Insight (January 2015), Airbus Market Research and Forecasts

The regional economic outlook for Latin America and the Caribbean suggests modest growth in 2015, and acceleration in 2016. Lower oil prices are good news for Chile, Uruguay, and Caribbean and Central American nations, but not necessarily for oil exporting countries in the region. Compared with the pre-Asian crises years when the region also posted strong economic growth, the macro-economic fundamental conditions have improved substantially.
The region’s real GDP growth is expected to average 3.6% per year over the 2014-2034 period, above that forecast globally. Together with the large and growing urban populations, propensity to travel in the region is expected to develop further, with countries like Chile, Brazil and Colombia, reaching the levels achieved by more mature economies by 2034.

Traffic growth to/from/within Latin America and the Caribbean is expected to expand at an annual 4.7% rate, above the 4.6% World annual rate. Three out of the top twenty largest traffic flows continue to be linked to the region: Western Europe - South America, with an expected annual expansion of 3.9%, South America - USA, with an average annual expansion of 4.9% and finally, Domestic Brazil, with a forecasted 5.4% annual increase. A sound long-term social and economic outlook; regional airline consolidation already in place, LCC stimulation, and a modern fleet of passenger aircraft all support the long-term development of this region as an aviation market. Traffic within the region (domestic and intra-regional) will help to drive passenger growth, representing more than 35% of the total by 2034, above the current share which is ~30%.

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Regional economic development and a growing middle class offer growth opportunities, both for legacy and low-cost carriers. Up until today, the LCC’s steady expansion was mainly concentrated on the Brazilian and Mexican domestic markets. Traffic growth to/from/within Latin America and the Caribbean is expected to expand at an annual 4.7% rate, above the 4.6% World annual rate. Three out of the top twenty largest traffic flows continue to be linked to the region: Western Europe - South America, with an expected annual expansion of 3.9%, South America - USA, with an average annual expansion of 4.9% and finally, Domestic Brazil, with a forecasted 5.4% annual increase. A sound long-term social and economic outlook; regional airline consolidation already in place, LCC stimulation, and a modern fleet of passenger aircraft all support the long-term development of this region as an aviation market. Traffic within the region (domestic and intra-regional) will help to drive passenger growth, representing more than 35% of the total by 2034, above the current share which is ~30%.

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LOW COST SERVICE DEVELOPING IN THE REGION—MORE TO COME

More than 110 million seats were offered by Low Cost carriers in 2014, on routes connecting Latin American airports. This represents a one third market share for intra-regional traffic.

Over the last decade low cost carriers in Latin America have contributed to the surge in passenger traffic which averaged a 10.9% growth rate between 2004 and 2014. This compares to a slower growth rate of 6.4% in the period 1994-2004 where LCC operations were limited in Latin America.

However disparities in LCC market penetration exist between the different countries of Latin America. LCCs account for more than 55% of the domestic market in Mexico and Brazil, there is still a lot of potential of growth in the other Latin American countries where they represent less than 2% of the traffic.

LCCs in Latin America

**LCC MARKET SHARE CONTINUOUSLY INCREASING IN LATIN AMERICA**

THEIR GROWTH HAS ACCELERATED, ESPECIALLY DURING THE LAST 10 YEARS

LCCs Represent 35% of Latin America Regional Traffic

Source: OAG
As in other regions air travel in the CIS has proved resilient to economic cycles, rebounding quickly from short-term perturbations. During the last financial crisis in 2009, the CIS economy shrunk by a dramatic 6.8 percent. Consumer and business confidence dropped and air traffic followed suit. But the following year traffic surged by 17 percent, surpassing historical average growth rates to return to the long-term trend.

In the longer run, air travel consistently outperforms the economy. Over the past fifteen years, real GDP grew on average at 4.2 percent, while traffic increased by 8.5 percent in the region.

Travel and tourism have the potential to become a much stronger driver for the region’s economies. Compared to the World average, only Georgia stands out with tourism contributing over 20 percent to its GDP. In the rest of the region, the increase in travel has yet to translate into higher employment and income. Nine out of ten countries rank below the 100th by employment in tourism, with levels significantly below the 9.5 percent World average. The share of Russian tourism in the World is less than one percent, while its economy represents 2.4 percent of global GDP.

Another difficulty is the time and cost in getting a visa to some of the countries in the region. Simplification, as in other countries, who have improved their entry procedures, would stimulate tourism demand and traffic for the airlines serving the region.

Real GDP is forecast to grow on average 2.7 percent over the next 20 years.
Over the past ten years, the number of passengers flying to and from emerging economies has reached 34 million in 2013, compared to less than ten million in 2004. Travel to Asia-Pacific has increased by a multiple of four. On average, the yearly growth in travel with developing markets was 15.8 percent, 4.3 percent above the rate with developed countries. With further strengthening of trade with fast-growing economies the trend is likely to continue. Stronger ties with fast-growing economies are reflected in the number of cities connecting the CIS to other emerging countries. In 2014, the network consisted of 317 city pairs compared to only 51 in 2004. In terms of international air traffic volume, Europe remained the most important region with almost 28 million passengers transported in 2013. Middle East and North Africa grew at an astounding annual rate of 18.4 percent. In part, this growth was driven by the arrival of low cost carriers in several CIS countries. Excluding Russia, the number of Middle Eastern cities served increased from two in 2009 to 21 in 2014. In terms of offered capacity low cost carriers’ market share in 2014 is up by 21 percent.
GROWTH IN DOMESTIC TRAVEL

Russia is looking forward to a renaissance in domestic travel as the latest economic slowdown and local currency fluctuations are making it more affordable for Russians to visit domestic destinations instead of taking outbound trips. Figures for 2014, are encouraging: Russian carriers transported 17.9 percent more passengers on domestic flights.

The high cost of transportation within Russia is still the main barrier. With the absence of low cost carriers on domestic routes, the cost of the airfare is estimated to often represent 50 percent of a tourist’s total expenditure on a trip. The government is supporting the development of domestic tourism through a federal target programme called Domestic and Inbound Tourism Development 2011-2018, which aims to increase the number of domestic trips by 150 percent.

FOCUS ON: TOURISM IN RUSSIA

Russia attracts tourists with a unique blend of old and new attractions. Although less visited than some other European destinations, Moscow and St Petersburg have already become synonymous with ‘culture-infused opulence’. Luxury tourism is flourishing, supported by high-end hotels, shopping, and world-renowned artistic performances.

Beyond the big cities, Russia is the largest country in the World, spanning two continents and boasting 23 UNESCO heritage sites, 41 national parks and 101 nature reserves. More than 5 million tourists visited Sochi in 2014, and 95 percent more visitors are estimated in 2015. With the 2016 Ice Hockey World Championship, 2017 FIFA Confederation and 2018 FIFA World Cup all scheduled in Russia, sports tourism will continue to play a major role.

Favourable exchange rates of the Ruble will further boost inbound international tourism. According to Xinhua news agency, Russia has already become the most attractive shopping destination for Chinese tourists, surpassing Japan, South Korea, Thailand and the US. Preliminary figures for 2014, suggest that China is taking the lead in terms of tourist visits to Russia (10-15 percent growth). Inbound tourism from Korea has increased by 70 percent after a visa simplification process introduced in 2013, while inbound tourism from Turkey has increased by 13 percent.

FOURTH INVESTMENT: 2014-2018

Russia’s image as an investment destination has improved significantly over the past decade, with the Government focusing on the development of tourism and infrastructure projects. In 2014, tourism investment in Russia amounted to $10.4 billion, with a further estimated $21.5 billion in 2015. This growth is expected to continue, with Russian authorities targeting $25 billion in investment by 2020.

NEW DELIVERIES

New deliveries in 2015 amounted to 922 aircraft, with a further 2,016 scheduled for delivery in 2016. This will increase the fleet size to 1,288 aircraft by 2014. The majority of these new deliveries will be single-aisle aircraft, with a significant number of twin-aisle aircraft also set to be delivered.

RESULTS

The results show a significant increase in domestic travel, with Russian carriers transporting 17.9 percent more passengers in 2014 compared to 2013. This growth is expected to continue, with a further increase of 20 percent in 2015. The government’s focus on tourism development is paying off, with a significant increase in inbound tourism and a growing international airport network.

Conclusion

Russia’s tourism industry is on the rise, with a strong focus on improving infrastructure and increasing tourist arrivals. The government’s investment in tourism development is paying off, with a significant increase in domestic and inbound tourism. The country’s unique blend of old and new attractions, combined with favourable exchange rates and improving infrastructure, makes it an attractive destination for tourists worldwide.
It would be hard to find anyone who would disagree that Africa has significant potential in terms of its economic development, growth opportunities and air travel. Covering about 30 million km², Africa is comprised of 54 countries, more than any other continent, even surpassing Europe with 47, and Asia with 44. These countries bring numerous assets, including young diverse populations, and reserves of valuable and much sought after natural resources. The diversity of its peoples and languages are matched only by the diversity in its ground transportation infrastructure, from its modern highways to at times impassible tracks. Aviation is and will continue to be the best way to connect Africa’s countries, not only to each other, but with the peoples and markets in the rest of the World.

**AFRICA’S POPULATION SET TO GROW**

Africa has striking demographics. Its population doubled between 1982-2009 according to the UN, and is today estimated at 1.1 billion representing approximately 15% of the World’s population, growing faster even than China and India. It is estimated that one in five people will live in Africa by the end of our forecast period in 2034.
Sources: UN Population Division, Department of Economic and Social Affairs (2012 revision).

AFRICA’S POPULATION IS YOUNG

This is the youngest continent in the World, with 41% of Africans below 14 years of age, globally this figure is 27%. This young population which is expected to double by 2045, will lead to a quite significant working age population (15-64 years) within the next 20 years, both a benefit and a challenge. The working age population in Africa rose by 30%, to reach over 570 million people between 2000 and 2010. With these levels of growth, it is expected that the continent’s potential labor force will reach a billion people by 2040. The last 20-years helping to fuel the region’s long-term growth.

AFRICA’S 20-YEAR CONSUMPTION PER CAPITA (2.4%) WILL EXCEED THAT OF WORLD AVERAGE (2.3%)

Since the beginning of this century, the diversification of Africa’s partnerships and its integration within the World economy, has certainly led to the acceleration in the region’s economic attractiveness and an improvement in business climate. Despite inequalities between different African regions, foreign direct investment flows rose by 4% in 2013 to reach $57 billion, with a greater focus in consumer-oriented industries illustrating the continent’s increasing proportion of households with discretionary income leading to a rise in consumer spending. With a less restrictive environment, a better education system and a greater exposure to the global market, Africa has managed to substantially improve its productivity over time, this expected to continue in the coming years.

AFRICA’S ATTRACTIVENESS

Sources: IHS Global Insight, Airbus

AFRICA’S POPULATION EXPECTED TO REACH 49% IN 2054 (VS 61% FOR THE WORLD AVERAGE)

Urban population which is below 14 years of age, globally this figure is 27%, this young population which is expected to double by 2045, will lead to a quite significant working age population (15-64 years) within the next 20 years, both a benefit and a challenge. The working age population in Africa rose by 30%, to reach over 570 million people between 2000 and 2010. With these levels of growth, it is expected that the continent’s potential labor force will reach a billion people by 2040. The last 20-years helping to fuel the region’s long-term growth.

AFRICA’S 20-YEAR CONSUMPTION PER CAPITA (2.4%) WILL EXCEED THAT OF WORLD AVERAGE (2.3%)
There appears to be more opportunity for intra-African trade. Whilst total African trade almost tripled between 2004 and 2012, African intra-regional trade represented just 13% of total commerce in 2012, compared to trade between emerging Asian countries which amounted to 53% for the same period. In recent years China has grown its links with Africa, trade as well as Chinese Foreign Direct Investment which has significantly increased over the last decade. While Chinese imports from Africa grew fourteen times between 2003 and 2013 to reach 113bn USD, Chinese flows into Africa reached over 2.5bn USD in 2012 for a cumulated FDI flow of over 4tn USD. Over the period 2003-2013, international origin and destination traffic between Africa and China has grown more than ten times with nearly 1.5 million monthly O&D passengers travelling by air between the two.

AFRICA’S LINKS TO CHINA GROWING

Sources: IHS Global Insight, UNCTAD, Chinese Ministry of Commerce, UNPD, Sabre GDD, Airbus

INTERNATIONAL O&D TRAFFIC FROM/TO AFRICA

2004-2014

+132%

AIR TRAFFIC POTENTIAL

Inter-continental traffic with Africa is largely focused on Europe, which accounts for almost 60%. However, in recent years, Asia-Pacific and the Middle East have increasingly gained importance representing more than 20% of traffic in 2014 compared to 15% ten years ago. This progression is supported by Africa’s exposure to business opportunities with other emerging economies, particularly in Asia and the focus of carriers from the Middle East who see opportunity in increasingly connecting Africa with the Asia-Pacific region.

Domestic traffic within African countries remains the primary market for African air travellers. However, Intra-regional traffic between African countries has grown faster than domestic traffic over the last 10 years, supported by growing African urban populations and African intra-regional trade.
Freighter forecast
Thanks to a more supportive economic environment driven by the emerging markets and the US, all regions of the air freight World benefited from the recovery. With US GDP growing at around 3.0%, and the Chinese economy expanding by an impressive 7.4% in 2014, some airlines and airports even recorded unprecedented cargo volumes in 2014.

Air freight is an important element of World trade, each year it transports more than one third of all trade by value. With higher business and consumer confidence even more products are being transported on the main deck or cargo holds of aircraft, both boosting productivity and yields.

GROWTH IS BACK... AND STRONG

After having stagnated or even decreased for almost three years, the air freight industry resumed its progress in 2014 by posting 4.5% growth compared to 2013. Additionally, in the summer of 2014, total air freight traffic surpassed for the first time the peak it reached in 2011.

Air freight volumes just surpassed the 2011 peak

GROWTH DRIVERS:
• REGIONAL TRAFFIC
• EMERGING ECONOMIES
• EXPRESS TRAFFIC
At the beginning of 2015, oil prices had reached an eight-year low at ~$50 per barrel. This is good news for the industry as these lower fuel prices offer a period for airlines to improve profitability through the reduced costs on offer and an opportunity to prepare for future.

Air freight is forecast to grow at 4.4% over the next 20 years. This will be largely driven by emerging markets where both general and express cargo are expected to continue to expand.

**Growth Rate 2014-2034**

4.4%

**INCLUDES BELLY AND MAIN DECK**

**TOTAL AIR FREIGHT TRAFFIC GROWTH**

Sources: Airbus GMF 2015, Seabury, IATA

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**MAIN DECK VS BELLY CAPACITY**

Just over 50% of the cargo traffic in 2014 was transported in the “belly” hold of passenger aircraft, that is in the space below the main deck where passenger luggage is also stowed. The market share for belly capacity is expected to continue to grow in the future especially on inter-continental routes. This is due to the addition of more larger more capable passenger aircraft on these flows, increasing the underfloor space available for freight operations. The need for these additional aircraft is being driven by passenger traffic growth higher than freight traffic growth. In 2014, passenger traffic grew by an estimated 6% while it is forecast to grow 4.6% per year over the next two decades. This belly capacity effect on the use and demand for dedicated freighters was apparent over the period 2011-2013, where cargo demand was flat whilst at the same time passenger traffic was recovering quickly from the effects of the financial crisis of 2008/2009. This was especially true on the trans-Pacific segment where additional belly capacity pressured main deck freighter activity.

**A350-1000 WILL BE ABLE TO CARRY UP TO 22T ON THE TRANS PACIFIC**

JAR 1.1 international flight profile
45% Annual wind reliability
Speed: LRC

**A350-1000**

**STRUCTURAL PAYLOAD**

22,200KG

**VOLUMETRIC PAYLOAD**

20,900KG

**Flying by Numbers**
These two effects combined, higher passenger growth rates and more capable long-haul aircraft will reduce the need for long range dedicated freighters in the future as belly capacity will capture more and more of the long-haul cargo demand.

RESULTS: MID-SIZE FREIGHTERS, VERSATILE AND COMPLEMENTARY TO BELLY CAPACITY UTILISATION

Three trends that Airbus foresees for the future of the air cargo industry:

• Express will continue to develop more rapidly than general cargo, this driven by both international traffic and domestic and regional traffic in emerging regions such as China and South East Asia. This will drive the need for more fuel efficient aircraft capable of carrying large volumes of low density goods. At Airbus, the A321P2F or the A330-300P2F are well suited for these kinds of missions.

• Medium haul regional traffic will surge, with the development of cargo networks in regions such as intra Asia, within Africa and Latin America. This will drive the need for mid-size aircraft, which are both versatile and a compromise between profit generation and risk mitigation during market downturns.

• Belly capacity will continue to grow especially on long haul routes where new cargo friendly passenger wide-bodies are expected to progressively replace large freighters thanks to very competitive economics.

The North American fleet is mainly a replacement market

The Asia-Pacific fleet is set to triple

The future freighter fleet distribution will reflect the growing influence of emerging markets

Sources: Airbus GMF 2014, ASCEND

WORLDWIDE SHARE OF BELLY CARGO VS MAIN DECK
Source: Airbus GMF 2015

Freighter deliveries
EXPRESS AND REGIONAL TRAFFIC WILL BOOST THE SMALL AND MID SIZE MARKET
BELLY CAPACITY WILL DRAMATICALLY IMPACT LARGE FREIGHTER PROSPECTS

World fleet
2034
2,687
2015
1,633

FREIGHTERS DELIVERIES OVER THE NEXT 20 YEARS
Source: Airbus GMF 2015

Belly outpace cargo growth
THE IMPACT OF NEW BELLY CAPABLE WIDEBODY PASSENGER AIRCRAFT WILL BE MAINLY ON LONG HAUL FLOWS

Billon Freight tonne kilometres

Source: Airbus GMF 2015
Summary of results
### PASSENGER TRAFFIC FLOW

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### SUMMARY DATA

#### NEW PASSenger AIRCRAFT DELIVERIES BY REGION

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<tr>
<th>Region</th>
<th>Africa</th>
<th>Asia-Pacific</th>
<th>CIS</th>
<th>Europe</th>
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<th>Middle East</th>
<th>North America</th>
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<td>Single-Aisle</td>
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<td>1,288</td>
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<td>12,613</td>
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#### CONVERTED FREIGHT AIRCRAFT DELIVERIES BY REGION

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<td>Small</td>
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<td>319</td>
<td>8</td>
<td>81</td>
<td>84</td>
<td>9</td>
<td>74</td>
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#### TOTAL FREIGHT AIRCRAFT DELIVERIES BY REGION

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<tr>
<td>Mid-size</td>
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<td>185</td>
<td>35</td>
<td>159</td>
<td>68</td>
<td>56</td>
<td>598</td>
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<tr>
<td>Large</td>
<td>17</td>
<td>222</td>
<td>25</td>
<td>73</td>
<td>1</td>
<td>85</td>
<td>188</td>
<td>617</td>
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<td>TOTAL</td>
<td>85</td>
<td>726</td>
<td>68</td>
<td>319</td>
<td>153</td>
<td>145</td>
<td>860</td>
<td>2,356</td>
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#### NEW FREIGHT AIRCRAFT DELIVERIES BY REGION

<table>
<thead>
<tr>
<th>Category</th>
<th>Africa</th>
<th>Asia-Pacific</th>
<th>CIS</th>
<th>Europe</th>
<th>Latin America &amp; Caribbean</th>
<th>Middle East</th>
<th>North America</th>
<th>20 Year new deliveries</th>
</tr>
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<tbody>
<tr>
<td>Small</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mid-size</td>
<td>6</td>
<td>72</td>
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<td>30</td>
<td>223</td>
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</tr>
<tr>
<td>Large</td>
<td>7</td>
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<td>51</td>
<td>1</td>
<td>66</td>
<td>111</td>
<td>392</td>
</tr>
<tr>
<td>TOTAL</td>
<td>13</td>
<td>217</td>
<td>24</td>
<td>88</td>
<td>32</td>
<td>96</td>
<td>334</td>
<td>804</td>
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The making of the Airbus Global Market Forecast follows a process which has been continuously developed and improved for more than 20 years. Each major change in the industry (such as the appearance of low cost business models or the strong development of hub and spoke operations) have been the occasion for Airbus to refine and improve its modelling in order to best identify and forecast current and future trends.

The GMF process consists in three main steps: the traffic forecast giving the overall shape of traffic evolution, the network forecast identifying the future evolution of the airlines networks, and the demand forecast estimating the number of aircraft which will be required to accommodate the traffic growth.

**FORECASTING TRAFFIC**

The objective of the traffic forecast is to assess the quantity of passengers traveling by air. Initially, all countries are grouped into 21 traffic regions, based on geographical proximity and level of socio-economic development. Each region pair defines a non-oriented traffic flow, assuming that outbound and inbound passenger traffic is balanced. Whenever a part of a traffic region develops significantly different from the rest of the region, a new, specific flow is created, taking into consideration some more country-related specific characteristics. This process resulted in 203 flows for the GMF 2015. The main input data for the traffic forecast are historical traffic volumes as well as large sets of historical and forecasted socio-economic data from external data providers.

For each traffic flow several socio-economic variables are selected and input in econometric equations with the aim to identify the one set or combination of variables that explains best the historical traffic evolution. Once the model and variables with the best fit are identified, the forecasted economic data are used to derive the future traffic volume. This forecast of passengers on-board is then reprocessed to estimate Origin / Destination demand at the region pair level, which is subsequently broken down at the country pair and at the airport pair level.
THE AIRLINE CALIBRATION PROCESS

GMF 2015 covers 651 passenger airlines and their subsidiaries worldwide. As a first step and for each of these airlines, a dedicated calibration process is carried out. It aims to take the best of several sources of information concerning the airlines in order to understand how an airline is operating each of its aircraft. Precise fleet data allows us to calibrate the detailed operations of a given airline (either scheduled or unscheduled) and therefore deduce which type of aircraft has been flying on which sector for a particular month of the year. This detailed adjustment allows us effectively apply the way an airline utilizes its aircraft on its network.

651 AIRLINES AND THEIR SUBSIDIARIES ARE ANALYZED
- AIRLINES DISTRIBUTION PER TYPE

FORECASTING NETWORK
Airline networks evolve over time and airlines keep on adding and removing routes from their network, changing the supply of travel from the passenger standpoint. The evolution of the network with new opened and closed routes shifts the demand from one routing to another, with an impact sometimes even visible at a level as high as the traffic flow level. Furthermore, new routes tend to fragment the market as they partially absorb traffic from the existing network and therefore impact the route-per-route traffic evolution. The network forecast aims at quantifying these impacts. Among the very large set of potential new routes, a subset of reasonable candidates is devised for each airline, based on the carrier’s current network and the potential size of new markets. This set of routes is fed into a ‘Quality of Service Index’-based model, which determines for each new route the traffic potential and the point in time when it could be opened.

FORECASTING AIRCRAFT DEMAND

The demand forecast aims to estimate the number of aircraft which will be required over the next 20 years to satisfy the World’s traffic growth. The new demand identified by the Airbus GMF (on top of current fleet and known orders) is expressed in neutral seats categories. The use of such virtual aircraft allows a view of future demand unconstrained by the product supply. This “theoretical” demand represents a solution which would best match the airlines needs in terms of aircraft size, if no considerations of supply (specific product performance, production availability, etc.) are made. Based on this undistorted view, the results can be used to consider such things as new product introduction, size requirements and timing. By examining the market at a route by route and airline by airline level then also allows a large number of other uses from discussions with airlines to our supplier partners for example.

FORECASTING AIRCRAFT DEMAND

- AIRLINES DISTRIBUTION PER REGION

651 AIRLINES AND THEIR SUBSIDIARIES ARE ANALYZED
- AIRLINES DISTRIBUTION PER TYPE
THE AIRLINE FLEET BUILD-UP

Once the overall neutral demand is forecast, each airline fleet build-up can be carried out. This demand is re-allocated to the existing fleet and the known orders. Generic assumptions are made for each region regarding the retirement age of the fleets but these schemes are adapted for each airline. Elements such as replacement plans (new aircraft replacing older types), end of contract lease, airline business models or economic and financial environment have to be taken into account in determining replacements.

The remaining demand which cannot be satisfied by the current fleet or the known orders corresponds to the open market. As well as identifying demand, the GMF also allows us to extract all forecast operational detail e.g., traffic flow, route, frequencies, utilization, load factors, etc.

A DEDICATED MODEL HANDLES THE FREQUENCY AND/OR CAPACITY SPLIT

Typical evolution on a route enjoying growth:

A market in this case can be defined as a set of routes on a given traffic flow for a certain type of airlines business model. For each of these markets, one or more airlines may compete and each route might have a different length. Taking all this into account allows us to specify how frequencies and capacity will develop over time, for a given traffic growth.

The calibration of this model has to be reviewed each year based on the market definitions and in light of any market evolution (e.g., infrastructure development plans).

As a result, the airline operation forecast outputs year by year, the demand in terms of aircraft numbers (yearly utilization, flight frequencies and capacity) expressed in neutral categories for the complete network of each airline.

AIRLINE FLEET BUILD-UP

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Generic assumptions are made for each region regarding the retirement age of the fleets but these schemes are adapted for each airline. Elements such as replacement plans (new aircraft replacing older types), end of contract lease, airline business models or economic and financial environment have to be taken into account in determining replacements.

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2ND HAND AIRCRAFT

The final step of the GMF process consists in estimating second hand deliveries as they account for a significant share of the total deliveries.

Survival curves applied to the GMF start fleet per aircraft type allow identification of the gap between the statistical World fleet attrition and the shape of those that “stay in service” from the GMF fleet build-ups. The delta corresponds to the maximum potential for second hand aircraft. In parallel to this, candidate aircraft are identified amongst the existing fleet and reallocated as deliveries to another airline if the corresponding demand exists.

This study is carried out on a worldwide basis as a first step and then refined by region and by airline. At the end of the process, these “second hand” deliveries are subtracted from total deliveries, leaving only the “new deliveries” which are the figures displayed in this publication.
The freighter forecast process can be divided into three main steps: the traffic forecast resulting from econometric projections for each directional flow, the integration of the belly traffic co-ordinated with the passenger aircraft forecast and the demand forecast evaluating how many freighters will be needed in the next 20 years (and whether they will be new build or converted freighters).
TRAFFIC FORECAST
Once the calibration of an airline has been carried out, the first step in the traffic forecast is assessing the relationship between macro-economic trends and the cargo traffic. GDP, Real Income, Investments, Exports/Imports, industrial production and many other parameters are used in our econometric models to assess the best comparison to growth in traffic. Alongside these macro-economic factors, the analysis of historical data allows us to identify and understand the multiple trends involved in the evolution of the market, such as modal shifts for certain commodities.

GLOBAL INPUTS TO GENERATE A LONG TERM FORECAST FOR TRAFFIC & Fleets

- 200 airlines fleet plan
- 8,000 routes
- 150 flows
- Specific domestic markets models
BELLY CAPACITY AND BASE YEAR CALIBRATION

Once the traffic flow forecasts have been established, it is important to split the future demand between belly capacity and the dedicated freighters. Thanks to the passenger aircraft GMF, it is possible to estimate the belly capacity each airline will offer on its network. In addition, Airbus monitors how airlines use their belly holds to carry cargo to establish trends in belly capacity load factors. As a result, the combination of the airlines’ passenger network development and the cargo hold load factor evolution gives an estimation of the share of freight transported on the passenger aircraft belly on each flow.

In parallel, a calibration is conducted on today’s freighter fleet. An assessment of multiple data sources is performed to arrive at the best estimate of airlines’ network, aircraft utilisation and load factors for the base year. Projections based on historical data collected for more than a decade with current market perspectives gathered from stakeholders across the industry to ensure the latest data and trends are incorporated.
**FREIGHTER FORECAST**

The freighter forecast for the next 20 years estimates the number of aircraft required to accommodate the cargo traffic growth. The demand is divided into four neutral size categories starting at ten tonnes, including new build and converted aircraft. Thanks to these virtual categories, it is possible to assess which aircraft size, on which flow, best suits the market. Our freighter forecast is the result of the analysis of the behaviour of nearly 200 different airlines.

When forecasting an airline’s choice of new build or converted freighters, a detailed study of historical trends is used to identify the trend in activity per aircraft size category. On top of using historical trends, an analysis of current and future fuel prices is performed to simulate their effect on this decision-making process.

**DOMESTIC EXPRESS ANALYSIS**

To address the specific question of the domestic express market, a dedicated forecast model has been developed and deals with four countries: the US, which today is the largest player in express traffic, as well as Brazil, India and China, who are all expected to become large consumers of express services over the next 20 years. This model analyses a distinctive set of parameters to understand the customers’ need for express services resulting from well-known or new behaviours, such as online purchasing, next-day delivery for business purposes, service reliability and traceability. The model for domestic express consists in two parts. The first estimates the US express traffic and fleets based on a 40 years historical data to identify the main drivers of growth. The second, used for the emerging markets, takes US express development as a benchmark, while taking into account the unique characteristics of each country including infrastructure development, labour costs, internet penetration, for example.

**FREIGHTER DELIVERIES WILL EXCEED 2,300 AIRCRAFT IN THE NEXT 20 YEARS**

<table>
<thead>
<tr>
<th>Payload Range</th>
<th>Expected Deliveries</th>
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</thead>
<tbody>
<tr>
<td>Small (10t &lt; payload &lt; 30t)</td>
<td>609</td>
</tr>
<tr>
<td>Mid-Size (30t &lt; payload &lt; 80t)</td>
<td>718</td>
</tr>
<tr>
<td>Large (payload &lt; 80t)</td>
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<td></td>
<td>1,130</td>
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<td></td>
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SAFE HARBOUR STATEMENT

Disclaimer
This presentation includes forward-looking statements. Words such as anticipates, believes, estimates, expects, intends, plans, projects, may, forecast and similar expressions are used to identify these forward-looking statements. Examples of forward-looking statements include statements made about strategy, ramp-up and delivery schedules, introduction of new products and services and market expectations, as well as statements regarding future performance and outlook. By their nature, forward-looking statements involve risk and uncertainty because they relate to future events and circumstances and there are many factors that could cause actual results and developments to differ materially from those expressed or implied by these forward-looking statements.

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- Currency exchange rate fluctuations, in particular between the Euro and the U.S. dollar;
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- Product performance risks, as well as programme development and management risks;
- Customer, supplier and subcontractor performance or contract negotiations, including financing issues;
- Competition and consolidation in the aerospace and defence industry;
- Significant collective bargaining labour disputes;
- The outcome of political and legal processes, including the availability of government financing for certain programmes and the size of defence and space procurement budgets;
- Research and development costs in connection with new products;
- Legal, financial and governmental risks related to international transactions;
- Legal and investigatory proceedings and other economic, political and technological risks and uncertainties.

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