SUKHOI SUPERJET 100

# 2016 → 2035 MARKET OUTLOOK

Superjet International


Our 2016–2035 Market Outlook highlights SuperJet International's vision for the air transport market. It is dedicated to the 2016 Olympic Games in Rio de Janeiro. Our company forecasts a demand for approximately 6,200 regional jets over the next 20 years. The 91-120 seat segment will account for about 63% of total deliveries.

Today, with the beginning of the end of the financial crisis and lower fuel prices, there is a trend towards complementary services with better quality (more frequencies and point to point) that would allow better yields but with 100-seater modules (low and medium density).

Regional aviation will continue to play a significant role by increasing the numbers of connections between countries and creating significant growth.

I hope you find our Market Outlook useful.

Nazario Cauceglia
C.E.O. of SuperJet International

# Foreword


# Macroeconomic

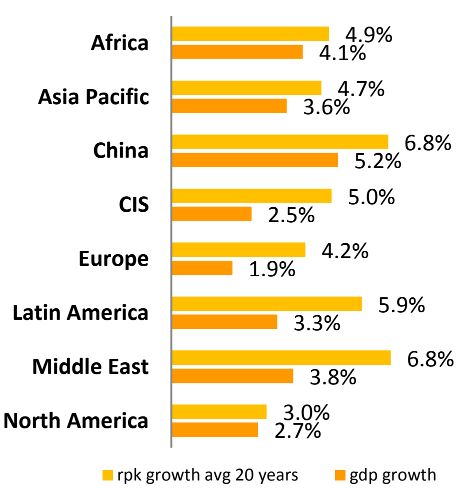
Like 2014, 2015 was also a positive financial year for the industry and in 2016 IATA expects the global airline sector to post net profits of $39.4 billion on revenues of $709 billion. 2016 is expected to be the fifth consecutive year of improving aggregate industry profits. In 2015 more than $10 billion – about 7% of US airlines' market capitalization – was returned to shareholders in the form of stock buybacks and dividends. Lower oil prices boosted overall airline profits. Delta Air Lines netted $5.1 billion in savings in 2015 and US carriers retained between 50% and 75% of their fuel cost savings.

Passenger demand is forecast to grow 6.2% in 2016 and unit costs are expected to fall by 7.7%. The coming years will see a continued pressure on profit margins and whilst the forecast is for fuel prices to remain low, this might not be sustainable due to the potential changes in the political climate in some key markets. On average airlines will make $10.42 for each passenger carried.

Economic growth is again one of the main drivers of our forecast. Weak economic conditions prevail globally. GDP is expected to grow by 2.3% in 2016, down from 2.4% in 2015 and the weakest growth since 2008 when the global financial crisis hit. Considering macro geographic areas, besides the traditional emerging markets, Africa will also become an important player in the next 20 years in terms of relative growth. India will play a primary role in the worldwide economy and will rank third in GDP in terms of purchasing-power-parity.

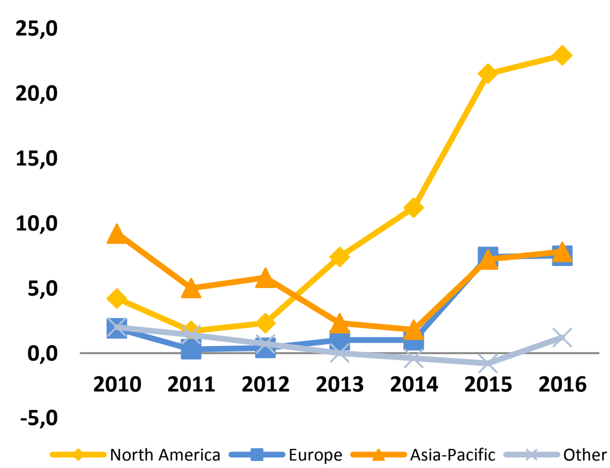
An important issue facing the airline industry today is security, which is becoming a key challenge in some areas and countries. For example, the impact of the Brussels terror onslaught was immediate: in the immediate aftermath occupancy rates at some hotels in the city plunged to just 25% and the airport was closed for several days. Security costs may increase, leading to a corresponding increase in ticket prices. However, statistics suggest that whilst events such as terror attacks do impact passenger confidence, passenger growth does tend to recover.

## 20 years forecast




Source : SJI Forecast

## Net profit, $ Billion




Source : IATA

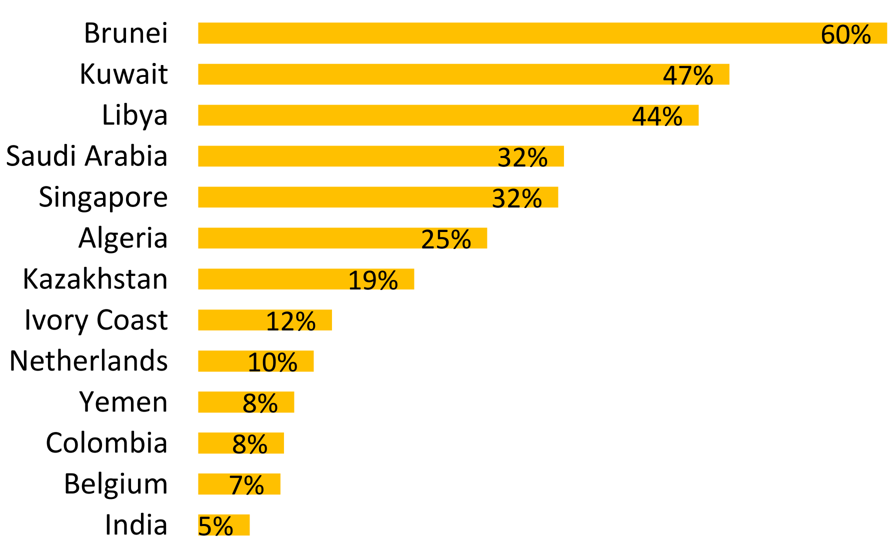

# Crude Oil Volatility

The price of crude oil continues to be the topic most debated by economists and financial analysts worldwide, though few of these experts can truly predict the pricing trends of this commodity. It is firmly established that the crude oil price has influenced the global economy since the early part of the 20th century, but does this really remain true today?

Most experts agree that growth during the past decade has been driven by the emerging markets, which have consumed every kind of commodity. This has been the reason for the high average oil prices, and has driven oil prices to their highest peaks. As these markets have begun to reduce growth, or even to stall, producing countries have been forced to divert production and export to other commodities; this could be a long-term solution to mitigate the impact of low oil prices. It seems likely that in the medium to long term oil prices will not reach the heights experienced in the recent era of record prices. What does this means for the civil aviation sector?

Recently most innovation in civil aviation has been directed towards fuel savings: an average crude oil price of more than $100 per barrel had a dramatic impact on the operating costs, and thus net margins, of airlines. It is clear to see that the regional aircraft sector, and in particular 50-seat regional jets, has been affected most by the oil price volatility – in less than a decade we have seen the progressive phasing out of smaller jets. As a consequence, average sizes and aircraft capacity have grown proportionally with the oil price in order to mitigate the impact on cost per seat. In addition to the above some other concepts have been emphasized, for example ‘right sizing’. Now the situation is changing again but most of the concepts, ideas and strategies developed during the era of high oil prices seem to be showing more resilience than in previous years. The regional aircraft market still remains highly competitive but the industry seems to be better focused on fundamentals than ever. Fuel price is definitely not the only driver of the regional aircraft economy and many other aspects have to been taken into consideration to better understand an industry that has become, year by year, more competitive and advanced.

## Estimated oil exports as a % in GDP in 2018



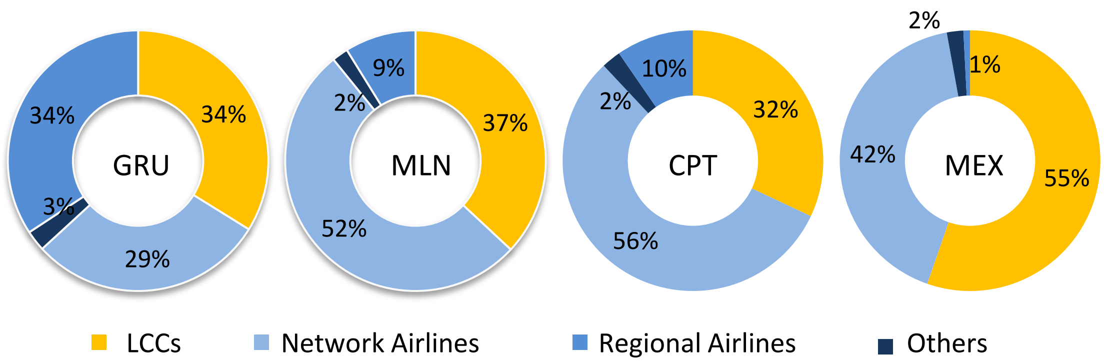

Source : Bloomberg

# Low Cost Carriers

Few things have had such a radical impact on a sector as the effect of LCCs on air transport. Creating a new way of air travel, able to generate and capture an altogether new demand, LCCs have been driving the largest part of air transport growth for more than two decades. Nowadays the concept is extending worldwide and evolving, adapting to different operating environments. From their origins operating from secondary airports in North America and Europe, these airlines have now conquered the main hubs of emerging markets. In large cities of Latin America and Asia, LCCs already lead the total number of flights, with a share well above the 30% of total available seats, while on routes up to 2000 nm they can easily exceed 50% of available seats. This is the case for the main airports of São Paulo, Manila and Cape Town, while in Mexico City the share reaches 55% of the total and exceeds 70% on domestic routes. In 2015 on the traditional London–Berlin route, LCCs had a share of 71% with more than 1.3 million passengers carried.

Classifying LCCs is not an easy task, given the regulations, the specific characteristics that those airlines exhibit in each geographical area and the worldwide tendency of carriers to claim themselves as low-cost or low-fare airlines. It is possible to identify three main categories. In any market there is a primary group of large airlines, which are price leaders on trunk routes and consequently are named “ultra-low-cost carriers” (ULCCs). A second vast group of airlines exists, often competing in ULCC networks, but having a less radical approach. While this second group exhibits aspects typical of a low-cost structure, at the same time it offers other elements such as enhanced passenger comfort or even an integrated network typical of more traditional carriers. These airlines are positioning in between LCCs and network airlines, and are therefore classified as “hybrid low-cost carriers”. In addition there is a third group of low-cost airlines, generally small players, operating on regional point-to-point networks, serving thin routes among medium cities at low fares. These airlines may be termed “regional low-cost carriers”. The ULCCs are characterized by their famous no-frills policy and their extremely high passenger volumes in order to achieve economies of scale by flying large aircraft of 180–200 seats. They service major cities, increasingly through secondary terminals of main airports, rather than via secondary airports as in their early days. Incomparable frequencies and services of proven efficiency are core to their business model.

## LCCs market share in emerging markets (available seats)




Source : Airlines schedule

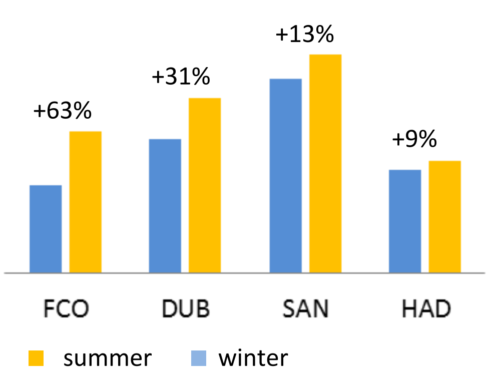



ULCCs have achieved leadership of direct O&Ds (origin & destination) passengers between hubs in Western markets, reaching a load factor that often exceeds 90%. In the coming years, we will see a further consolidation in mature markets and an expansion of the ultra-low-cost model in the emerging ones. The future challenge for this category of airlines over the next decade will be the expansion into the long-haul sector. A large number of carriers are categorized as "hybrid carriers ", offering tickets at convenient prices and realizing significant ancillary revenues, but at the same time oriented to offer a more comfortable service, increasing the pitch of the seats and adopting more relaxed baggage policies. These airlines have a large integrated network, often partnering with major long-haul operators to distribute the incoming passengers, and are also popular for business passengers. In contrast to ULCCs and hybrid low-cost carriers, the "regional LCCs" are adopting a different strategy, identifying local niches connecting small and medium cities. Their need is to identify routes that suit their size, have enough traffic to guarantee sufficient cash flows, but at the same time have volumes that are not attractive to the larger LCCs. These regional LCCs airlines are growing by scouting new routes and improving the operational flexibility of their network. In this way, as the only operator on the majority of their links and flying 100-seat aircraft, they have the possibility to increase their yield, while at the same time they need to adopt a low-cost concept to win competition against trains and buses. These airlines are expanding on regional niches in mature markets and reaching new areas in the world.

Certain aspects highlight the differences between low-cost airlines in various parts of the world. Mature markets, and in particular Europe, where leisure travel accounts for a large proportion of LCC passengers, are suffering a structural problem of seasonality. Almost a third of the LCC fleet is grounded during winter: the large demand for air transport in particular towards the south of Europe leaves unused capacity outside of the tourist season. Additionally the choice of many carriers to fly a single fleet of large aircraft, which is at the root their business model, penalizes their flexibility and therefore contributes to reduced frequencies in winter. Regarding comfort, airlines from different regions seem to have different approaches – in particular, comfort appears to be more important for US carriers, with an average seat pitch in excess of 31 inches, while in Europe the seat pitch is typically below 30 inches and in the Asia Pacific less than 29 inches.

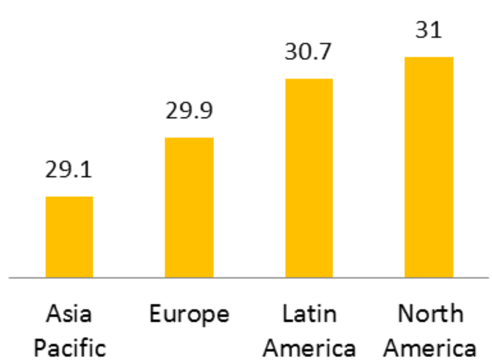
## LCCs seasonality gap on mature markets

Weekly available seats




## LCCs average seat pitch

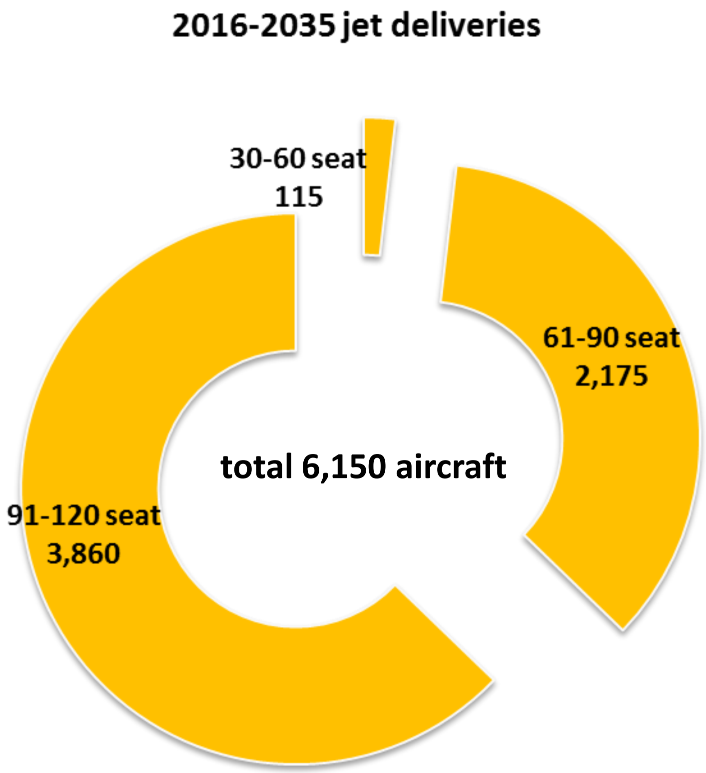
Inches

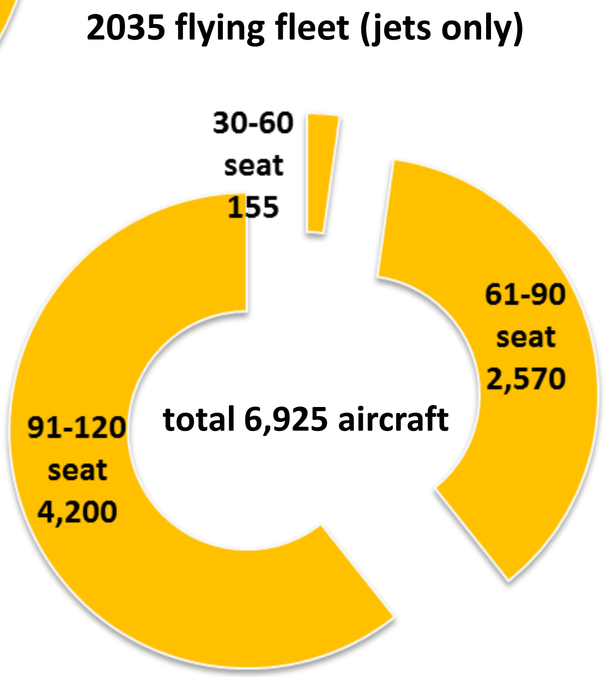



Source : Flightglobal Analyzer

# Forecast

# Forecast - Summary




# Forecast - Breakdown

*2016 Flying Fleet*

| | Africa | Asia Pacific | China | Europe | Latin America Caribbean | Middle East | North America |
|---|---|---|---|---|---|---|---|
| *Jet 30-60* | 85 | 35 | 25 | 145 | 45 | 10 | 845 |
| *Jet 61-90* | 45 | 65 | 25 | 220 | 35 | 35 | 900 |
| *Jet 91-120* | 45 | 155 | 90 | 455 | 245 | 45 | 235 |
| **Total** | **175** | **255** | **140** | **820** | **325** | **90** | **1,980** |
| **% on total** | **5%** | **7%** | **4%** | **22%** | **9%** | **2%** | **51%** |

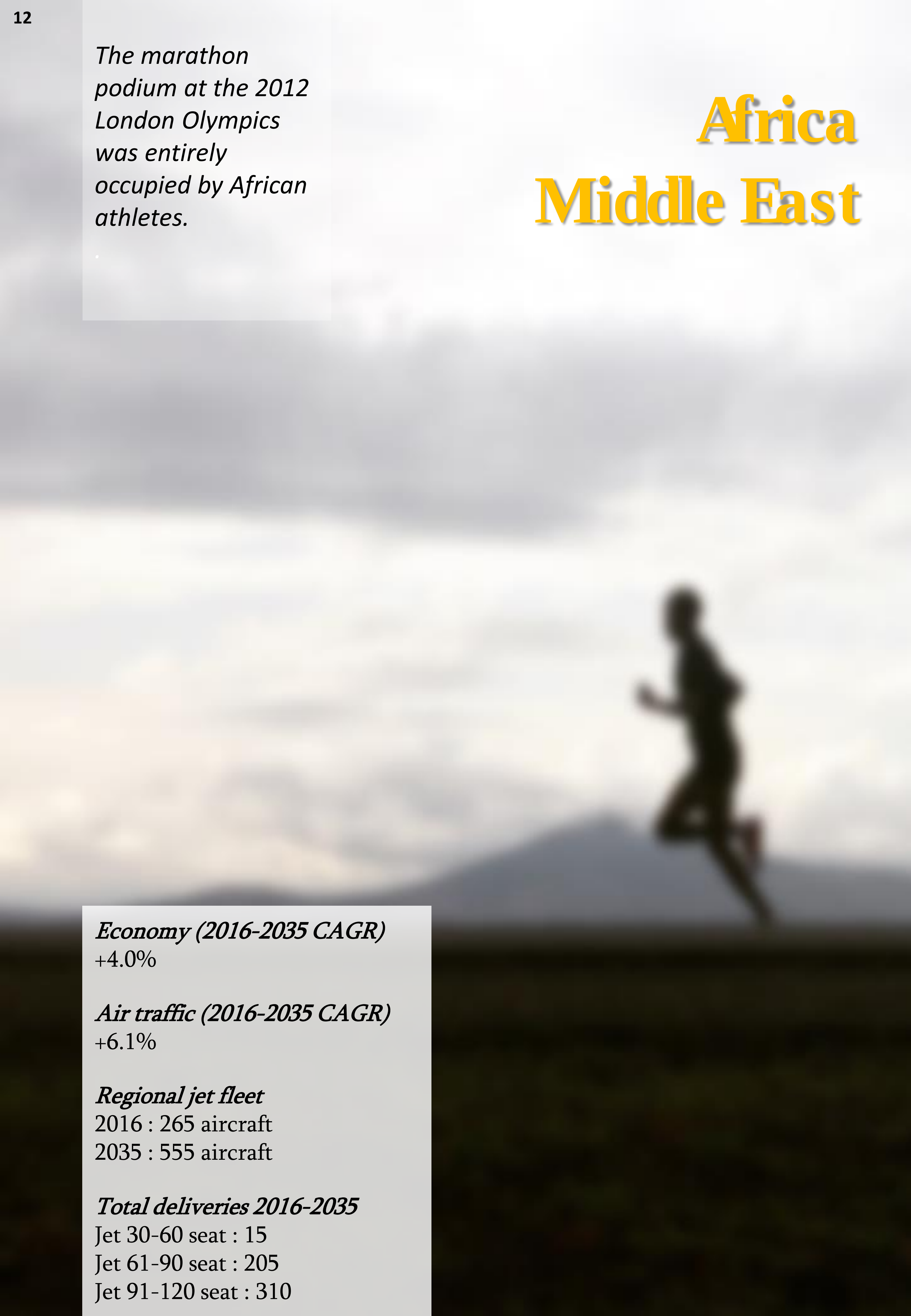
*2016-2035 Deliveries*

| | Africa | Asia Pacific | China | Europe | Latin America Caribbean | Middle East | North America |
|---|---|---|---|---|---|---|---|
| *Jet 30-60* | 15 | 40 | 40 | - | 20 | - | - |
| *Jet 61-90* | 155 | 85 | 190 | 325 | 110 | 50 | 1,260 |
| *Jet 91-120* | 180 | 330 | 650 | 1,095 | 660 | 130 | 815 |
| **Total** | **350** | **455** | **880** | **1,420** | **790** | **180** | **2,075** |
| **% on total** | **6%** | **7%** | **14%** | **23%** | **13%** | **3%** | **34%** |
| **Jet 91-120** | **5%** | **9%** | **17%** | **28%** | **17%** | **3%** | **21%** |

*2035 Flying Fleet*

| | Africa | Asia Pacific | China | Europe | Latin America Caribbean | Middle East | North America |
|---|---|---|---|---|---|---|---|
| *Jet 30-60* | 20 | 40 | 40 | 5 | 20 | - | 30 |
| *Jet 61-90* | 160 | 95 | 200 | 375 | 115 | 60 | 1,565 |
| *Jet 91-120* | 190 | 345 | 690 | 1,195 | 760 | 125 | 895 |
| **Total** | **370** | **480** | **930** | **1,575** | **895** | **185** | **2,490** |
| **% on total** | **5%** | **7%** | **13%** | **23%** | **13%** | **3%** | **36%** |

# Regional overview



*The marathon podium at the 2012 London Olympics was entirely occupied by African athletes.*

# Africa
# Middle East

***Economy (2016-2035 CAGR)***
+4.0%

***Air traffic (2016-2035 CAGR)***
+6.1%

***Regional jet fleet***
2016 : 265 aircraft
2035 : 555 aircraft

***Total deliveries 2016-2035***
Jet 30-60 seat : 15
Jet 61-90 seat : 205
Jet 91-120 seat : 310

# Africa & Middle East

Even though Africa is today the poorest continent on the planet, some African nations led the pack of fastest-growing economies in 2015. Ethiopia's economy grew 8.7% last year and is set to expand 8.1% in 2016, according to International Monetary Fund estimates. Only Papua New Guinea grew faster last year, at 12.3%. In 2016 most countries in sub-Saharan Africa will see a gradual pickup in growth, but with lower commodity prices, to rates that are lower than those seen over the past decade. Africa's growth acceleration is resulting from more than a resource boom coupled with government action to end political conflicts as well as to improve macroeconomic conditions. In the near future growth will be supported by the global worldwide need for commodities and Africa's increased access to international capital.

Foreign direct investments have influenced the economic growth of Africa enormously. Investors perceive Africa as an ideal destination for their investments, not least because the continent also has the world's highest birth rate. Every dollar spent on capital projects generates economic returns of 5–25% per annum and worldwide investment will reach US$9 trillion per annum by 2025. African's population in the next 40 years is forecast to reach two billion, which will be 20% of the world's population. In addition to the above, Africa is the youngest continent (the average age in African countries is 20 years old). From the economic point of view, the countries will benefit from an increased labor force and offer a potential market for customers.

Aviation is playing an important role in Africa, supporting nearly 7 million jobs and accounting for $80 billion in GDP. Despite the challenges, African countries have embarked on aggressive airport expansion plans in order to boost the continent's aviation infrastructure: in 2014, 40 new African airport projects were initiated. Angola has spent US$2.1 billion on airport construction and Nigeria is planning to spend US$1.07 billion in the coming years. The African air transport market is concentrated on main hubs: the top 10 airports account about 50% of total traffic and non-African carriers dominate intercontinental traffic to and from the region, accounting for 80% on traffic.

## Africa's relative attractiveness

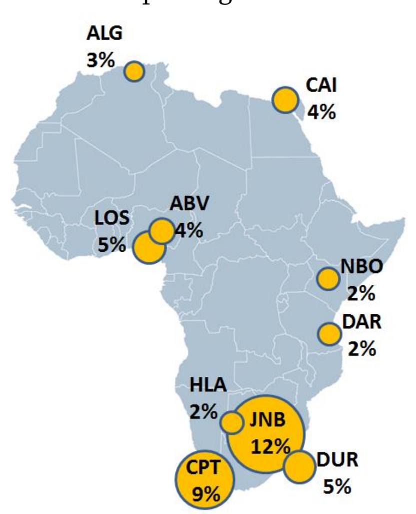
Relative to the following markets, is Africa more or less attractive as an investment destination?

| | 2011 | 2013 | 2015 |
|---|---|---|---|
| 1 | Asia | Asia | Oceania |
| 2 | North America | Oceania | North America |
| 3 | Western Europe | Latin America | Asia |
| 4 | Middle East | North America | Africa |
| 5 | Oceania | Africa | Western Europe |
| 6 | Latin America | Central America | Latin America |
| 7 | Eastern Europe | Western Europe | Central America |
| 8 | Africa | Middle East | Eastern Europe |
| 9 | Central America | Eastern Europe | Middle East |

Source : EY's 2015 Africa attractiveness survey

## Top 10 airports

Number of passengers - intra Africa




Source : Milanamos – PlanetOptim.Future

# Africa & Middle East

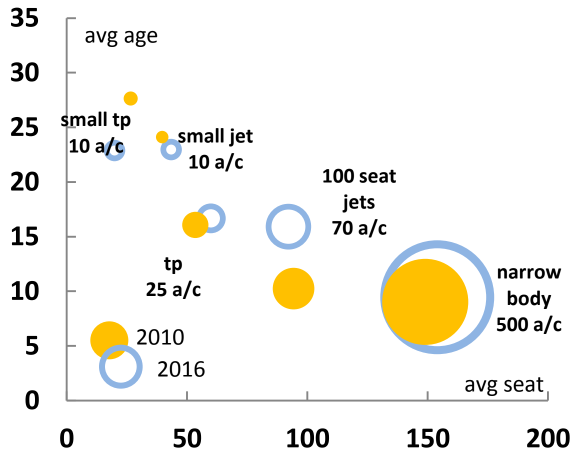
The primary obstacle to expansion in Africa is lack of liberalization or deregulation. The 1999 Yamoussoukro Decision designed to liberalize air travel has not been fully implemented. Because of this in many cases African travelers find it easier to fly first to Europe and then to another African country.

The inadequacy of older modes of transport in Africa makes air transport the ideal way to link this vast continent (10 countries in sub-Saharan Africa have no access to the sea). In addition, this huge untapped market (only 10% of people currently travel by air), which is predicted to double in population by 2026, will bring additional opportunities for regional airlines directly linking the cities in the region. The best opportunities for growth and expansion lie moreover in the under-served African domestic markets.

The Middle East is the fastest-growing region in the world with double-digit growth over the last 10 years. Dubai International kept its position as the world's busiest airport for international passengers for the second year after traffic exceeded 78 million in 2015 and the airport opened its newest facility, the US$1.2 billion Concourse D, this year. Abu Dhabi International Airport achieved record traffic figures in 2015, with more than 23 million passengers passing through its terminals (up 17.2% compared to 2014). Doha, a major Middle Eastern airport and one of the fastest growing airports in the world, welcomed more than 30 million passengers in 2015. Most of the growth is related to long-haul flights but the domestic and regional market is important to feed the main hubs and to provide access to secondary markets.

In the Middle East many city pairs are still under-served or served by infrequent narrow-body flights. The area has experienced one of the highest growth rates in air traffic over the last 10 years and such growth could be maintained by deploying more and more right-sized aircraft in the 100-seat category.

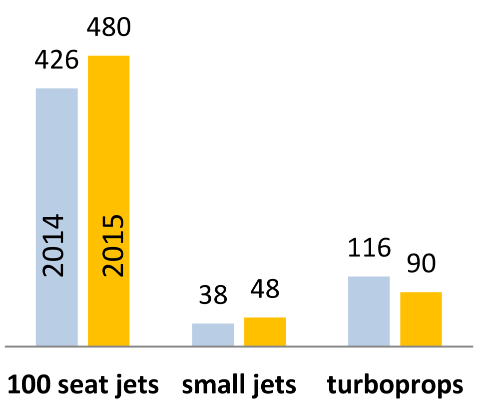
## Middle East fleet




Source : Flightglobal Fleet Analyzer

## Number of city pairs

Intra Middle East




Source : Milanamos – PlanetOptim.Future

*2020 Olympic Games will take place in Tokyo. Japan has already hosted the Summer Olympic Games in 1964.*

# Asia Pacific

***Economy (2016-2035 CAGR)***
+3.6%

***Air traffic (2016-2035 CAGR)***
+5.0%

***Regional jet fleet***
2016 : 255 aircraft
2035 : 480 aircraft

***Total deliveries 2016-2035***
Jet 30-60 seat : 40
Jet 61-90 seat : 85
Jet 91-120 seat : 330

# Asia Pacific

Growth in developing East Asia and the Pacific has remained resilient and is expected to ease only modestly, from 6.5% in 2015, to 6.3% in 2016, and to 6.2% in 2017–18. Nevertheless East Asia and Pacific accounted for almost two-fifths of global growth in 2015, more than twice the combined contribution of all other developing regions. The gap between the less structured economies (e.g. Laos, Vietnam, Cambodia) and the more structured ones (e.g. Australia, Japan) is forecast to decrease in the coming years. Moreover, in the medium to long term, this region – with a very young population increasingly willing to travel – is predicted to be one of the fastest growing air transport markets.

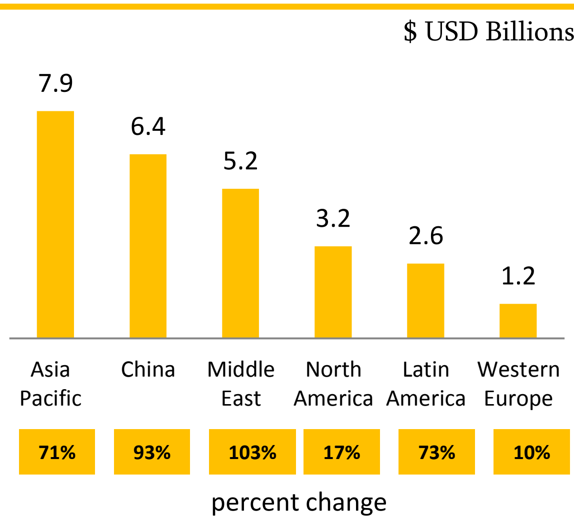
The volume of air passenger traffic in the Asia Pacific region has grown significantly over the past decade due to the strong impetus of economic growth as well as trade and economic integration at both regional and global levels. This growth is set to continue strongly in many countries. These developments in air transport have in turn fostered the MR&O (maintenance, repair and overhaul) market, which will continue to grow, increasing 71% from 2015 to 2025. Average profit per passenger is forecast this year at $5.94 mainly thanks to lower fuel costs and a more stable cargo market, which is of great importance in the manufacturing regions. Net margins are forecast to be 3.9% and net profits $7.8 billion.

The ASEAN (Association of Southeast Asian Nations) “Open Skies” policy came into effect on January 2015. This policy is intended to increase regional and domestic connectivity and further enhance regional trade by allowing airlines to operate freely throughout the region thanks to a higher degree of liberalization in the air transport market. The new “Single Aviation Market” will lead to growth and to more competition. At a macro level the market for regional jets and narrow-body aircraft seems skewed in favor of the latter but at a micro level there are many routes that could be profitable once served with the right equipment. Regional jets offer airlines the possibility to serve low-demand routes, avoiding underutilization of narrow-body assets. In the ASEAN region, Malaysia and Indonesia are the two fastest growing commercial aviation markets, helped by growing Asia Pacific tourism flows and the strong growth of regional LCCs.

## Growth multiplier, 2015-2025


Source : McKinsey & Company

## MRO Spend, 2025 vs 2015




Source : ICF International, fcst in 2015 $USD

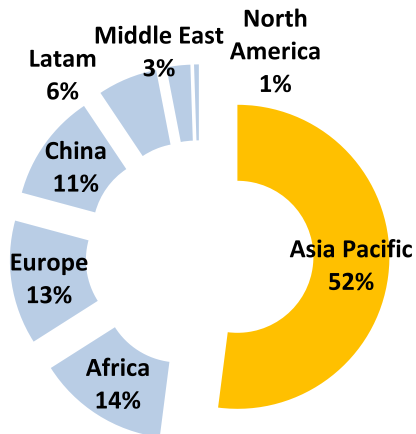
# Asia Pacific

India has the fastest growing domestic aviation market in the world, ahead of China and the US. India's economy gained momentum in FY2015 and is expected to have a high growth rate for the next five years. Robust urban consumption and public investments have supported growth despite an unfavorable external environment. A combination of strong GDP growth of around 7.5% and the decline in oil prices, which has supported lower fares, is driving year-on-year domestic traffic growth.

Over the past years traffic has grown ahead of capacity, resulting in a more favorable operating environment for airlines .The country's domestic air passenger demand soared 24.6% in February compared with a year ago likely owing to more flights, fare cuts and faster economic growth. For FY2017 domestic traffic is expected to grow at around 20%, which could push passenger numbers over the 100 million threshold, six times larger than in FY2004. The government is furthermore willing to boost the domestic market and India plans to impose a 2% levy on most domestic and international airline tickets, raising funds to improve regional air travel infrastructure as part of a long-awaited proposal to get more Indians flying. This tax is expected to raise about US$230 million in the coming years. The Indian government in 2016 approved the construction of 14 new airports across the country and has revealed a plan to restore operations at around 350 currently unused airstrips by 2030, in a bid to boost domestic and regional air connectivity. In keeping with the plan to connect under-served routes, many airlines are adding new connections to second-tier cities or increasing their domestic connectivity by using smaller aircraft operating to smaller towns.

Viability Gap Funding (VGF) has been provided by the government to support those domestic routes likely to be initially unprofitable. During the last year, India's airlines have received a total of $750 million in equity, and overall industry debt has declined over the last 10 years from $12.6 billion to $11.8 billion. Airlines are expected to seek up to $1.4 billion of debt and equity funding in FY2017 and in the short and long term the growth outlook is positive.

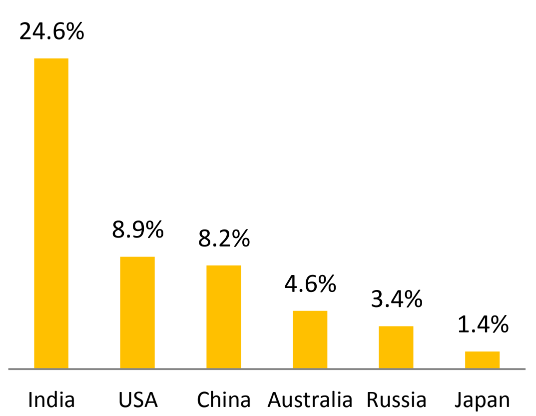
## Number of new airports project



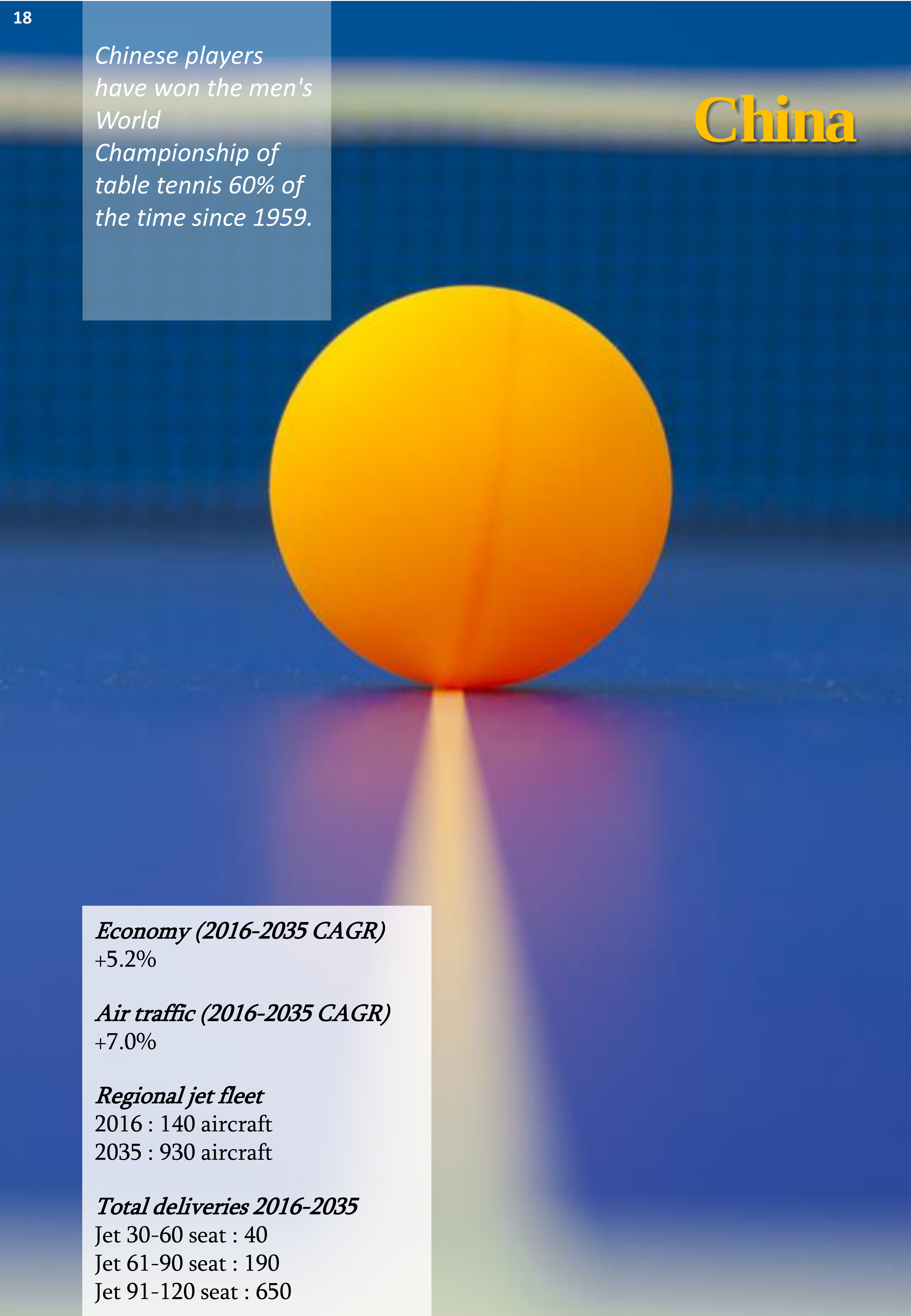

Source : CAPA

## Domestic passengers growth

RPK / year on year (Feb 16)




Source : IATA



*Chinese players have won the men's World Championship of table tennis 60% of the time since 1959.*

# China

***Economy (2016-2035 CAGR)***
+5.2%

***Air traffic (2016-2035 CAGR)***
+7.0%

***Regional jet fleet***
2016 : 140 aircraft
2035 : 930 aircraft

***Total deliveries 2016-2035***
Jet 30-60 seat : 40
Jet 61-90 seat : 190
Jet 91-120 seat : 650

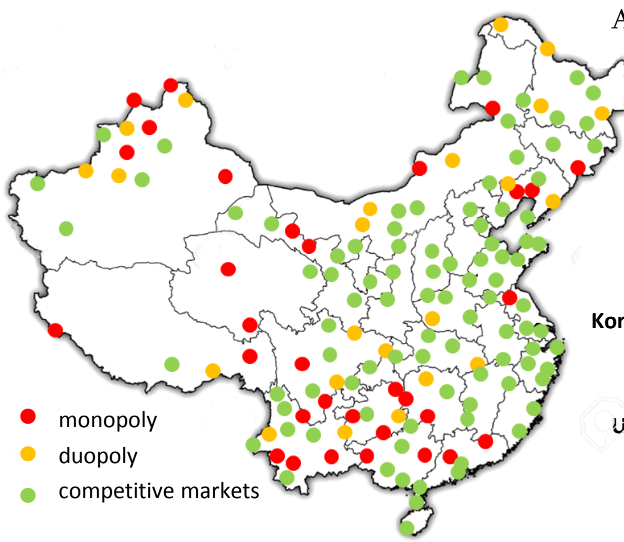
# China

Beyond the overall GDP figures, a ‘two-track economy’ has developed in China in the last few years. The first track – characterized by slowing growth – comprises the country’s traditional sectors (steel, shipbuilding, real estate and industrial products). The second, faster-growing track consists of sectors and companies focusing on consumers and services, as well as those driven by innovation and technology. The development of these markets continued in 2015 and they are poised to continue this momentum strongly into 2016.

Compared to the US, China might appear like a late bloomer in terms of the development of its aviation industry. Nevertheless, IATA predicts that China is expected to overtake the US as the world’s largest passenger market by 2029. In 2034 China will account for some 1.19 billion passengers, 758 million more than 2014 with an average growth rate of 5.2%.

The Chinese government initiated a series of reforms in 2013 to bring a higher degree of liberalization to the sector, resulting in an increase in competition especially in the eastern part of the country. One of the most important programs is the ‘One Belt, One Road’ initiative. Under this initiative, highways, railways and air routes will be established, and Chinese regions will further integrate resources, policies and markets to connect with the outside world. In order to boost traffic, visa requirements have been relaxed, infrastructures have been expanded and new bilateral agreements have been signed. Thanks to the above, 2015 has been the most profitable year for China’s aviation industry to date, with the sector reaping a 54.8 billion yuan (US$8.5 billion) profit despite the slowing mainland economy. The Civil Aviation Administration in China is targeting a 10.7% increase in traffic for 2016. Over the last five years, passenger traffic has increased by an average of 10.4% per annum. In order to improve their performance, Chinese airlines have since 2013 been looking for breakthroughs in two main ways: by accelerating the opening-up of international and regional airlines, and by tapping into the low-cost aviation market.

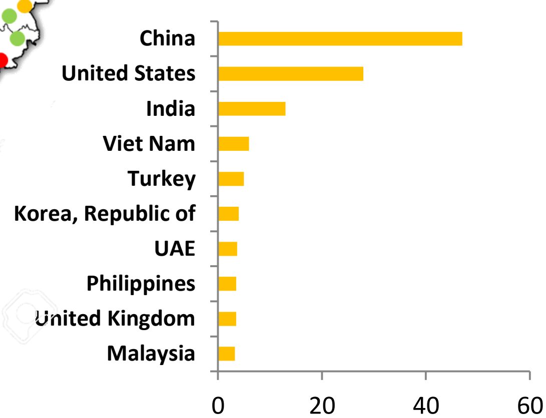
## Competition level




Source : Airlines schedules

## Gains in pax volumes

Average annual change in O-D market size (millions, 2015-2020)




Source : IATA, Oxford Economics

# China

Last year, Chinese airports handled a combined 914.8 million passengers, up 10% from 2015. Plans are afoot to increase regional and domestic traffic by investing in new infrastructure, and China is to invest about 77 billion yuan (US$11.7 billion) this year on the construction of civil aviation infrastructure. The total cost of Beijing's new airport was estimated to be $13.1 billion. Eleven key infrastructure projects and 52 upgrades or expansion work on civil aviation facilities will be started in 2016. By 2020, China aims to have 260 airports and more than 20 aviation hubs that will serve 91% of the population living within a radius of 100 km of each airport. Many of these new airports will be fed by 100-seat aircraft due to right-sizing operations.

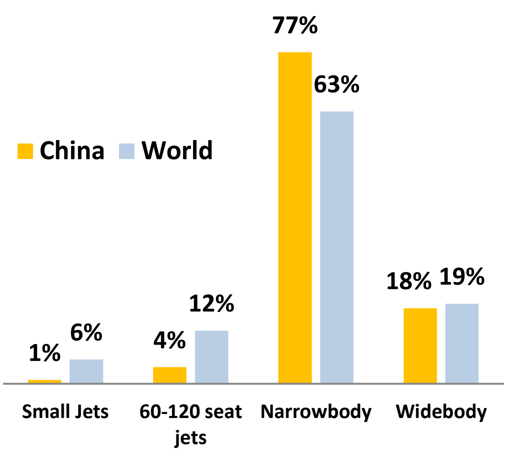
An important aspect of the Chinese air transport market is linked to the rise of Chinese owned operating lessors. The mainland Chinese operating-lessor fleet has grown year on year, reaching over 780 aircraft, representing about 9% of the worldwide lessor jet fleet. This tremendous growth has also been facilitated by the recovery of the global economy with strong results in China. Moreover, many Chinese lessors are subsidiaries of state-owned banks with mandates to invest in high-technology market sectors. But what about customer diversification? While the fleet distribution of Ireland-based lessors is homogeneous worldwide, more than 80% of aircraft owned by Chinese lessors are today flying in the Asia Pacific.

Today, the regional jet market is still quite small in comparison to that of the narrow-body one. Narrow bodies are still the backbone of the domestic market despite not being the perfect choice for serving low-to medium-density city pairs.

Nonetheless, regional aircraft operations have grown significantly over recent years and today more than 500 daily flights are flown by 100-seat jets. In addition to the above it should be emphasized that the overall number of regional aircraft is too small to meet the rapid development of the China's regional industry and that its percentage is well below the worldwide average.

## Fleet composition

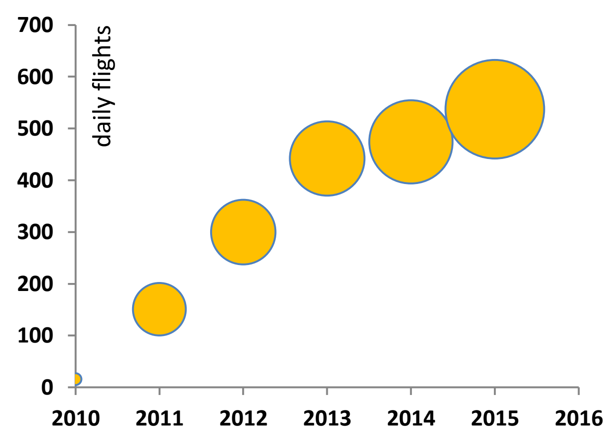
% of in service fleet




Source : Flightglobal Fleet Analyzer

## 100 seat jets

Number of daily frequencies - intra China




Source : Milanamos – PlanetOptim.Future
Bubble dimension proportional to market share

*The first international Olympic Games in the modern era were held in Athens in 1896.*

# Europe

***Economy (2016-2035 CAGR)***
+1.8%

***Air traffic (2016-2035 CAGR)***
+3.8%

***Regional jet fleet***
2016 : 820 aircraft
2035 : 1,645 aircraft

***Total deliveries 2016-2035***
Jet 30-60 seat : -
Jet 61-90 seat : 325
Jet 91-120 seat : 1,095

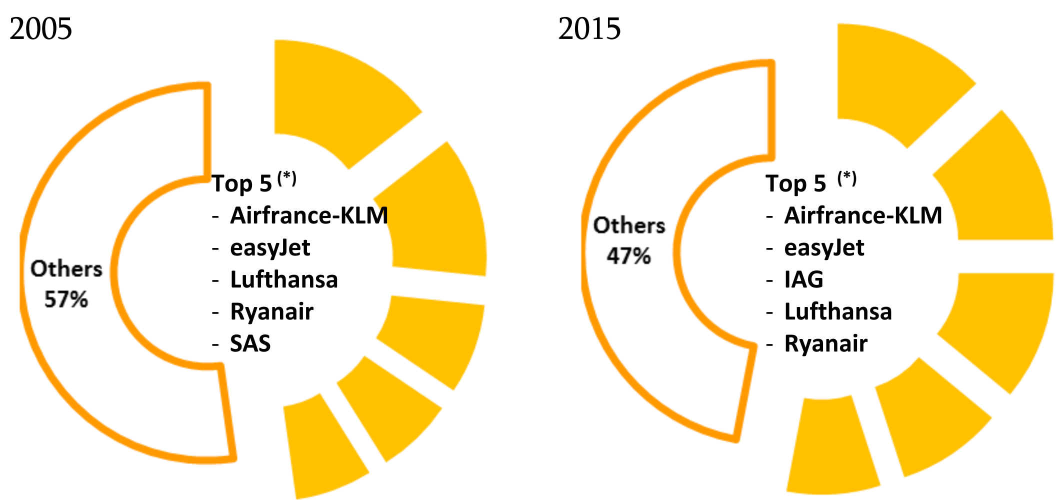
# Europe

The Eurozone's economic recovery remains moderate. The euro's exchange rate has also fallen in recent months, enabling European companies to strengthen their exports towards emerging markets. Furthermore, fiscal policy is becoming more supportive of growth than in previous years and measures taken by the European Central Bank will maintain financing costs low for an extended period. On 23rd of June UK voted to leave E.U. Arguably the Uk's access to free market has been a key factor in the rise of low-cost carriers over the last twenty years. The medium-and long-term effect will depend upon the relationships that are established between the UK and the ECCA (European Common Aviation Area) member states. Oxford Economics forecasts Brexit to reduce UK outbound by around 4% p.a. Airline consolidation is a key aspect the European market will face in the coming years. While larger carriers have formed mergers, flag carriers and budget airlines are fueling cut-throat competition on short-haul routes. Consolidation is on the rise but it is unlikely this will become an overnight solution. It does not sit well with regulators, who do not like a monopoly, or consumers, who do not want higher airfares. In 2015 Europe's top five airlines and airline groups controlled about 53% of total capacity, up about two percentage points over the last 10 years. By comparison, in the US about 45% of total traffic is shared between the top two airlines.

The Single European Sky (SES) is a European initiative to improve the way in which Europe's airspace is managed. It will  help European air traffic management to solve current issues that affect air transport and to cope with future demand. Implementation of the SES could reduce CO2 emissions by 10% and save airlines €5 billion, which could be more meaningfully invested.

European low-cost carriers (LCCs) continued to post year-on-year gains in passenger numbers and load factors across their short-haul networks in 2015 despite warnings from some airlines that revenues could continue to be impacted by weak travel demand following the terrorist attacks in Europe. The major network carriers' response to low-cost competition on short-haul routes has also included the possibility to replicate some of the product/service and pricing features of the LCCs model on certain routes.

## Intra EU passengers




(*) in alphabetical order

Source : Milanamos – PlanetOptim.Future

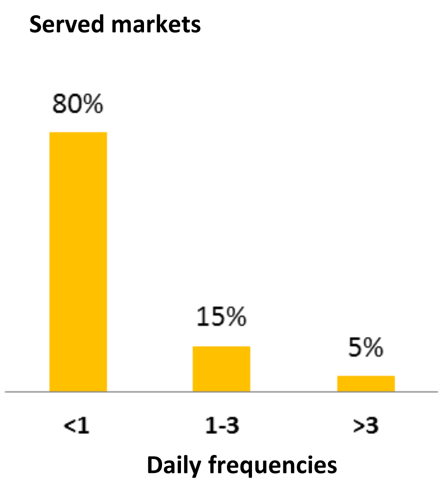
# Europe

In addition to the above, some major airlines are also transferring selected niche markets to their affiliate LCCs.  LCCs, in turn, are also investigating new business opportunities, such as feeding the European hubs of the major airlines. But why would major airline groupings wish to have budget airlines as feeders? Simply because LCCs can operate feeder flights more cheaply and can offer more connection options. Another aspect of the market that Europe's legacy airlines have to deal with is an environment of falling fares due to LCCs taking a greater market share. The yield of the legacy airlines is not only continuing to drop but is falling faster than expected. Legacy carriers cannot manage such a reduction unless structural costs are reduced.

Despite being the second largest civil aviation market in the world, Europe has still many under-served city pairs that could usefully be better connected. The growth of LCCs, whilst it has stimulated traffic on some niche markets,  has on the other hand reduced the frequencies on certain other routes once flown by the major airlines. About 80% of intra-Europe city pairs are connected less than once per day, and more than half of all EU domestic airlines operating narrow-body jets are flying with passenger loads better suited to a 100-seat aircraft. Increasing frequencies with smaller aircraft could permit airlines to optimize their networks and thus increase their market share, which would also better serve business travelers who prefer higher flexibility. Analyzing the trend over the last few years, it is clear that airlines are also utilizing their regional jets as a complement to narrow-body aircraft during some off-peak operations. Today, big regional jets are flying longer routes which were once the preserve of bigger aircraft. This is due to their improved comfort and economics. According to SJI, about 40% of European 100-seat jet applications are right-sizing operations of narrow-body routes.

The average age of the fleet is relatively high, which points towards a need for European airlines to replace a large number of aircraft in the short to medium term. About 20% of the worldwide fleet is flying in Europe. The market is shifting towards bigger modules both for narrow-body and regional jets. Smaller regional jets have been replaced in recent years by 100-seat jet aircraft.

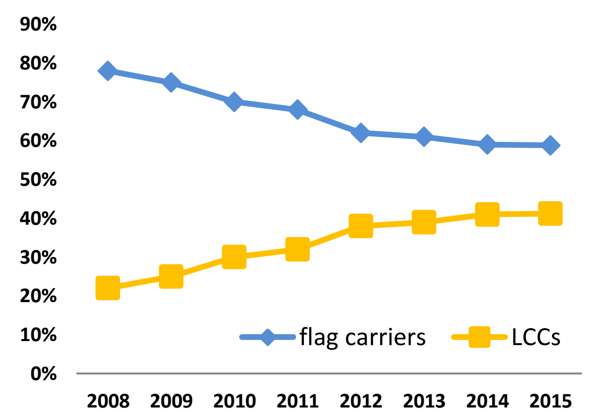
## Intra EU Network




Source : Milanamos – PlanetOptim.Future

## EU airline market share

By available seat capacity (%)




Source : SJI analysis

*FIFA World Cup most successful team is Brazil with 5 titles.*

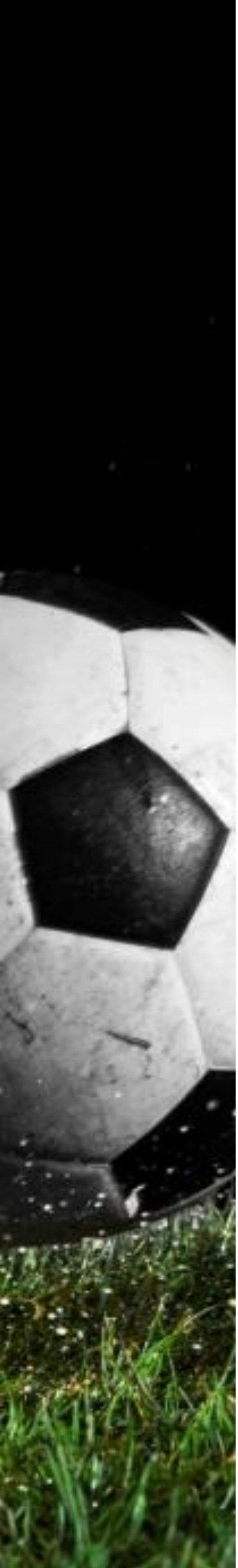
# Latin America Caribbean

*Economy (2016-2035 CAGR)*
+3.3%

*Air traffic (2016-2035 CAGR)*
+6.0%

*Regional jet fleet*
2016 : 325 aircraft
2035 : 895 aircraft

*Total deliveries 2016-2035*
Jet 30-60 seat : 20
Jet 61-90 seat : 110
Jet 91-120 seat : 660



# Latin America & Caribbean

The Latin American economy has been facing significant challenges over the last two years as the region has been affected by external and internal shocks. The weakness of the global economy has had a serious impact on a region traditionally highly dependent on commodities and furthermore unable to achieve a consistent degree of diversification. Volatility on the financial markets has weakened the currencies of all the region's main countries. Almost everywhere public debt increased for the second year running as domestic demand slowed. In addition, some countries – notably Venezuela and Brazil – are suffering a prolonged period of political instability, the negative effects of which have been spreading to the whole area. As a result, growth is estimated to remain feeble in the short term. In 2016 the region's GDP is forecast to drop by 0.9%. Recovery should start in 2017 with a 1.9% increase in GDP mainly underpinned by growing domestic demand. The economic outlook varies significantly among countries and sub-regions, with Pacific Alliance countries leading the growth. Mexico will be the fastest-growing country, followed by Chile and Colombia, while Brazil will need a few more years before it sees significant progress.

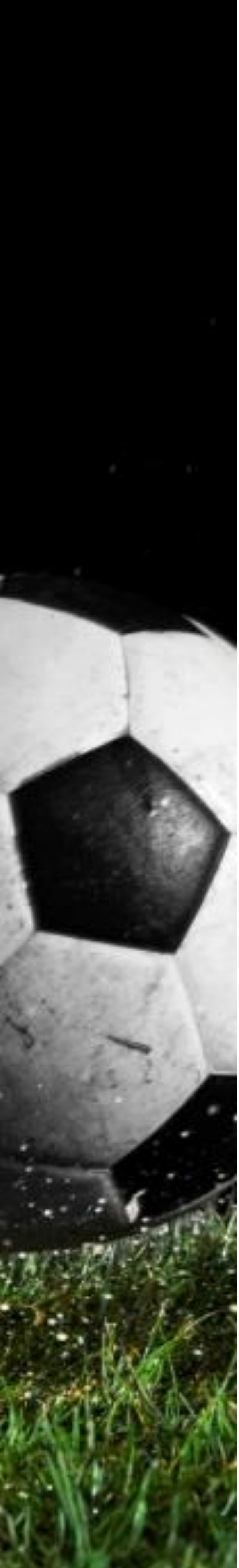
Despite the recession, domestic air passenger numbers have continued to grow at a consistent rate, following the trend observed over the last 10 years. Economic difficulties are having less impact on the air transport market in Latin America than elsewhere, proving once again the large potential of the region's demand for more internal connections. The results obtained by the regional aviation sector in several countries confirm the dynamism and strategic importance of this sector, which in recent years has benefited from mergers and consolidation of historical groups as well as from the creation of new regional carriers.

Domestic passenger numbers in Bolivia were about 0.7 million in 2005, but reached 4 million last year. Over the same period Peru reached 9.4 million, overtaking Chile and Argentina. Enjoying a more competitive market, Colombia and Mexico improved more than 50% over the last 5 years, reaching 17.5 and 30.8 million passengers, respectively. The difficulties of Brazil are highlighted by the fall in its domestic market which, after a tremendous 10-year growth of more than 300%, for the first time decreased in the last quarter of 2015. However, with more than 92 million domestic passengers, Brazil is one of the biggest markets in the world, with a terrific potential for growth, especially considering the current poor connections out of the main hubs. Despite a significant growth in passenger traffic, incomes declined due to yield reduction and due to some currencies depreciation.

## Traffic on main domestic markets (Y2015 million passengers)


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ***2010-2015*** | +180% | +52% | +57% | +95% | +47% | +51% | +44% |
| ***2005-2010*** | +100% | +56% | +92% | +27% | +14% | +26% | +103% |

Source : Milanamos PlanetOptim.Future



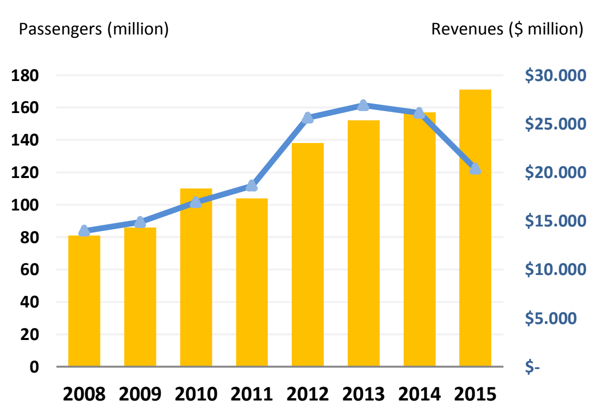
# Latin America & Caribbean

The key major plan of the Brazilian government to provide subsidies to build and improve the regional airport network and to subsidize regional flights has been temporarily shelved. Latin America currently suffers from several structural factors that are limiting air transport development, including the lack of regional infrastructure, congestion at the main hubs and protective regulations. Over the next 10–20 years the challenge for the region will be to overcome these hurdles and to develop a common approach to regulations in order to break through and achieve sustainable growth. Some plans are already in place while others have been postponed due to the current volatility in the region, but are ready to be relaunched when conditions are favourable.

The region will soon benefit from improvements to some main hubs. Mexico City's new airport, benefiting from the "Open Sky" agreement between Mexico and the US, will play a significant role as a gateway for passengers coming from North America. A new main hub in the north-east of Brazil is badly needed and this project is already under discussion. Once implemented, it will facilitate the movement of passengers flying from secondary hubs. Regional aviation will play a central role in the development of transport in the area, serving as a strategic asset to boost internal demand by providing links between medium-sized cities that are currently excluded from the main networks. In the region, 76% of passengers are flying on domestic routes below 500 nm, perfectly suited for regional aircraft operators. A more favourable taxation policy on domestic routes and an easier system of access for passengers traveling between different countries are some of most challenging targets to achieve in order to boost traffic. The evolution of the region is strictly linked to its propensity to implement such a common policy.

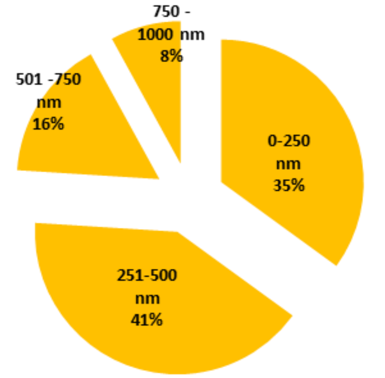
Low-cost carriers (LCCs) are fast expanding in the region despite the operating restrictions they face in several countries. LCCs are still highly focused on serving trunk routes, leaving a significant part of the market to regional carriers operating aircraft with 90 to 120 seats. Regional carriers are thus connecting medium to small markets with a point-to-point strategy and are creating secondary networks. This new model will be one of the main drivers in the region together with the consolidation of traditional carriers and the expansion of LCCs on to main routes.

## Intra South America (traffic and revenues)




## Passengers distribution

<100 nm routes




Source : Milanamos PlanetOptim.Future

*United States have won 14 gold Basketball medals since 1936.*

# North America

***Economy (2016-2035 CAGR)***
+2.7%

***Air traffic (2016-2035 CAGR)***
+3.0%

***Regional jet fleet***
2016 : 1,980 aircraft
2035 : 2,490 aircraft

***Total deliveries 2016-2035***
Jet 30-60 seat : -
Jet 61-90 seat : 1,260
Jet 91-120 seat : 815

# North America

The distances in the United States and Canada are large, with aviation being the primary mode of passenger transportation over longer distances. The road network in both Canada and the US is excellent, but distances lead to a dense air traffic network. Rail is not nearly as well developed as in Europe, with freight being the major commodity carried by rail. Rail ticket prices on segments such as Washington D.C. to New York and to Boston are often more expensive than airline tickets.

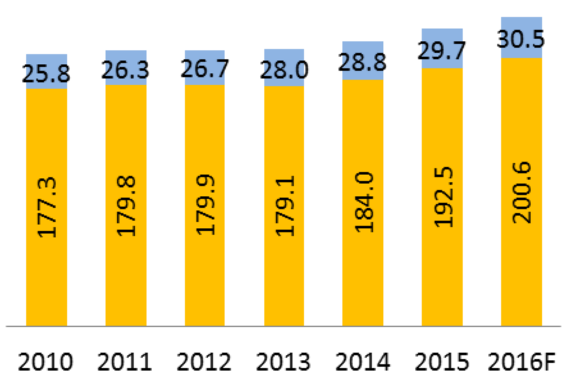
Since the economic downturn in 2008 there has been a slow recovery in the United States. In terms of air transportation, jobs are the critical factor in terms of passenger ability to travel, and job growth has been relatively slow, with employment in mid 2016 only now reaching the 2007 level. Passenger enplanements have also just reached the previous 2007 peak.

During the downturn, and slow recovery the US airline community has changed significantly. In 2008 fuel prices reached a peak in pricing, with fuel costing the airlines as much as $3.40 a US gallon. All airlines faced losses, often significant and the economic downturn brought rapid change. The number of airline departures dropped some 10%, which cured the domestic overcapacity issue and allowed major airlines to ground older less efficient aircraft sooner than would normally be the case. Passenger traffic also dropped around 10% or a little more, with load factors dipping below 80% for a time. During the same time period the Canadian economy, much smaller than that of the US, did not suffer as badly.

Fast forward to 2016. What has happened to the US Airline industry. Year over year, comparing traffic from 2014 (12 months data) to traffic in 2015, there has been a 5% increase in enplanements, so there is a total of domestic and international passenger enplanements for the period March 2015 to February 2016 of almost 811 million passengers, of which roughly 110 million are international passengers. Meanwhile we see the major airlines, and in particular the new American, Delta Airlines and United Airlines each earning more than 4 Billion dollars in pre-tax profitability. This remarkable profit picture is thanks largely to stable to upward yield and significant decrease in energy cost.

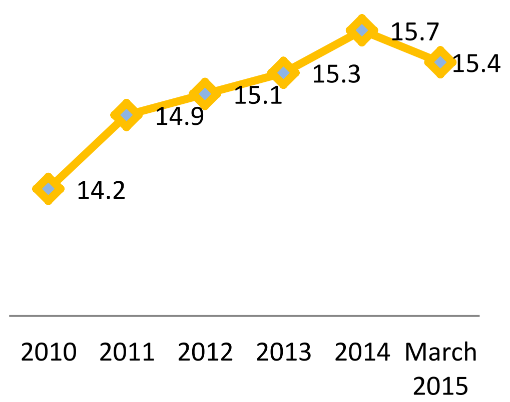
## U.S. airline onboard summer passengers

Millions




## Yield evolution

US¢/RPK




Source : A4A

# North America

Few purchased new aircraft and released less efficient aircraft thereby increasing efficiency in a significant manner. Significant mergers include American Airlines and US Airways, Delta Airlines and Northwest airlines and United with Continental. These three very large airlines compete with a number of smaller carriers including Hawaiian, Alaska, Jet Blue and Spirit. Further consolidation is occurring with Alaska seeking to take over Virgin America.

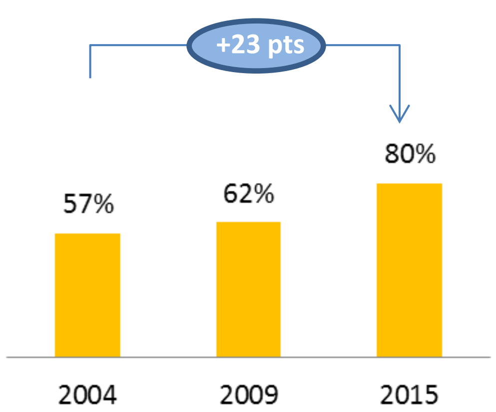
Consolidation seems important from a route network perspective. In order to compete, an airline benefits from a comprehensive route network and we see this trend in the Alaska/Virgin proposed merger.

Although it is interesting to look at historical trends in US aviation, there appears to be a significant change preparing itself in the United States. The pilot shortage in the US is real. Some organizations claim the pilot shortage can be remedied with higher wages. Certainly the pilot shortage may have been triggered in part by low salaries, but also by a change in the law by the US congress requiring 1500 hours experience before being eligible to fly in the right seat of a Part 121 passenger aircraft. Even if the law were changed today, simultaneously with a significant increase in pilot salary, there are no new pilots. Therefore the U.S. have a situation where there are no new pilots being created while at the same time some 20,000 older pilots will retire over the next few years.

Regional aviation has today more than 50% of departures in the US. Over the next 5 years it is inevitable that some carriers will start dropping marginal routes, especially at a regional level. Passengers in isolated communities will drive long distances to catch aircraft and the size of aircraft will increase significantly. We can expect SCOPE clauses to allow more than the current 76 passengers and for the major airlines to put more capacity but less frequency on many routes flying more “smaller” aircraft. It should be noted that the airline industry in general is re-equipping quite quickly with next generation aircraft.

## ASMs share

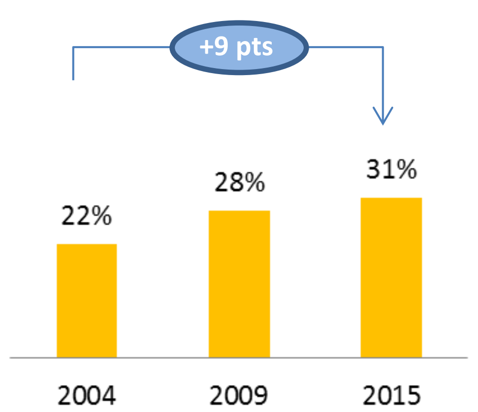
Top four U.S. carriers %




Strong consolidation

## ASMs LCCs share %

Within North America




Modest LCCs growth

# North America

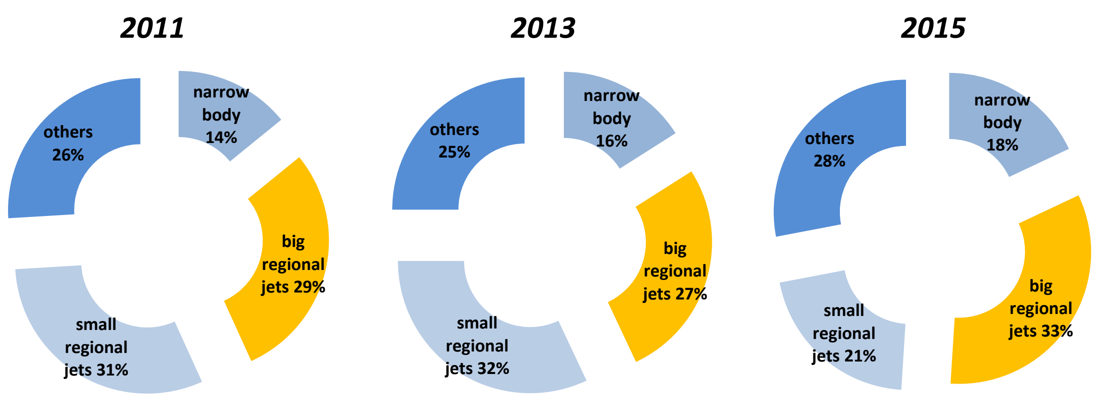
More and more next gen aircraft are flying or on order in the US, and these aircraft are becoming larger, driving down the cost per ASM while at the same time creating a de-facto hedge against higher fuel prices. The amount of jet fuel being up-lifted is actually in decline because of larger aircraft that are also significantly more efficient than previous generations.

The Canadian market operates in parallel with the US one, but is different. Canada's demographics put the majority of the population in a 200 mile wide band along the US border from the Atlantic to the Pacific. Population density is lower than the US, while distances are just as large, but with smaller communities. For many communities in the Northwest Territories, road, rail and water access is nonexistent or very limited, making air transportation the only viable, year-around connection to the rest of Canada. There are many challenges facing Canada's air transport sector. Demand on infrastructure to accommodate growth and opportunity is constant but the ability to address those demands is rather limited. Domestic fuel in Canada is taxed, so the cost of fuel is higher, leading to a greater interest in fuel efficiency by the Canadian airlines.

There is no pilot shortage in Canada, and therefore we can expect regional airlines to become interested in 100 seat aircraft. The Canadian market also has a strong regional potential in the far North of Canada. This is a very different market to the US, in that prior to 2014 this was largely a work environment, with work crews working mines and oil production facilities on a 2 to 3 week shift basis. In the province of Alberta, for example, 40,000 transient workers have left the province. These workers often lived in Eastern Canada, spent 3 weeks working in the Alberta North then returned home for 2 weeks, thus generating a lot of air miles. Because of a change in Economics in Asia, the mines and oil facilities have decreased their activities greatly, so this traffic has declined to a trickle. A number of regional airlines have closed their doors and put aircraft up for sale. These aircraft have declined significantly in value and doubtless many will be scrapped. Sooner or later the economic cycle will renew and workers pour into Canada's North, generating new demand for regional aircraft capable of operation into regional airports.

## Canada – U.S. routes

% of yearly frequencies




Source : Analysis of airlines schedules

# Appendix

# Sources & Geographic Areas

## Sources

| | |
|---|---|
| A4A | Airlines for America |
| AACO | Arab Air Carriers Organization |
| BLOOMBERG | |
| CAAC | Civil Aviation Administration of China |
| CAPA | Centre for Aviation |
| ERNEST&YOUNG | Africa attractiveness survey |
| FAA | Federal Aviation Administration |
| FLIGHTGLOBAL | Fleet Analyzer |
| IATA | International Air Transport Association |
| ICAO | International Civil Aviation Organization |
| IMF | International Monetary Fund |
| MCKINSEY & COMPANY | Report on China |
| MILANAMOS | PlanetOptim.Future |
| OXFORD ECONOMICS | |

*SPECIAL THANKS TO MR. JOHN BUCKLEY – BUCKLEY AVIATION L.L.C.*

## Geographic Areas

| | |
|---|---|
| AFRICA & MIDDLE EAST | Africa<br>Middle East (incl. Israel) |
| ASIA PACIFIC | Asia (excl China)<br>Australia<br>India<br>Japan |
| CHINA | Hong Kong<br>Macau<br>Mongolia<br>PRC<br>Taiwan |
| EUROPE | EU and EU Candidates<br>Norway<br>Russia&CIS<br>Turkey |
| LATIN AMERICA & CARIBBEAN | Caribbean<br>Central America<br>South America |
| NORTH AMERICA | Canada<br>U.S.A. |

**“There is no sport equal to that which aviators enjoy while being carried through the air on great white wings”**
*— Wilbur Wright, 1905.*

**2016 – 2035 Market Outlook**
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