Almost a half century ago, our people at Embraer started dreaming about our very first aircraft. Since then we've evolved from the daring dreams of a few people in Brazil into one of the largest aircraft manufacturers on the planet.

50 years and thousands of deliveries later, it is not just our aircraft that are taking off across five continents, as a market leader, our ideas are also helping to shape the future of this extraordinary industry.

This 15th edition of Embraer Market Outlook is all about that. In it we reflect on the current state of play of our industry, our main challenges and opportunities for a more connected world and the creation of a more profitable commercial aviation environment in the future.

We hope you enjoy reading it as much as we enjoyed putting it together.
AIR TRANSPORT DEMAND FORECAST

World passenger traffic is expected to maintain 4.5% annual growth over the next two decades. Despite external shocks to the system, air travel has proven to be resilient to ruptures, always keeping its historical trend in the long term.

By 2037, the Middle East and Asia-Pacific will be the fastest growing markets, with an annual RPK growth rate of 5.7%, followed by Latin America with 5.2%, Africa with 4.8%, Europe with 3.7%, the Commonwealth of Independent States (CIS) with 3.6% and North America with 2.7%.

World air transport demand will increase 2.5 times by 2037, reaching 17 trillion RPKs for all commercial aircraft segments. Asia-Pacific will be the largest market, accounting for 38% of world RPKs. Combined, Europe and North America will generate 37% of total air transport demand.
**UP TO 150-SEAT MARKET**

Embraer foresees world demand for 10,550 new aircraft with up to 150-seats over the next 20 years representing a total market value of US$ 600 billion.

**UP TO 150 SEATS – PROJECTED DELIVERIES BY REGION 2018–2037**

![Map of New Deliveries and Share of Total by Region]

**THE JET SEGMENT UP TO 150-SEATS**

Connectivity on mid-size cities and fragmentation in high-yield business markets will drive a worldwide demand for 8,230 jets with up to 150-seats.

**JETS UP TO 150 SEATS – PROJECTED DELIVERIES BY REGION 2018–2037**

![Map of New Deliveries and Share of Total by Region]
THE TURBOPROP SEGMENT

Short-haul operation will drive a worldwide demand for 2,320 turboprops.

TURBOPROPS – PROJECTED DELIVERIES 2018–2037

THE 150 TO 210-SEAT SEGMENT

Over the next 20 years, 20,260 narrowbody aircraft in the 150–210 seat segment will be delivered worldwide. Jets at the middle range of the capacity spectrum will continue to dominate future demand, but an increasing focus on the largest aircraft is expected.

JETS 150-210 SEATS – PROJECTED DELIVERIES 2018–2037
ECONOMIC SCENARIO

The last decade has been marked by a series of broadly felt economic crises and negative shocks, starting with the Global Financial Crisis of 2008–2009, followed by the European Sovereign Debt Crisis of 2010–2012 and the global commodity price realignments of 2014–2016. Now, global economic growth is expected to edge up from 2.4% in 2016 and 3.3% in 2017 to 3.4% in 2018 and 2019, its fastest pace since 2010. Over the long course, GDP growth is expected to remain steady at 2.9% annually until 2037.

GDP performance has been unevenly distributed across countries. Much uncertainty faces the world economy in the coming years. Political instability, populism, terrorism and banking sector fragilities all present significant headwinds. However the fundamentals remain in place to support accelerating growth. The US economy will benefit from an improving tax and regulatory climate and strengthening business investment. Eurozone growth will hold above 2% in 2018, but UK growth will cool as Brexit-related uncertainty delays investment over the course of the next few years. Asia’s other emerging markets will sustain robust growth. In China, particularly, growth will gradually slow as the government aims to reduce excesses in industrial capacity, debt, housing, and shadow banking. China’s private consumption, however, is projected to grow above 7% over the next years. Russia and Brazil will continue to recover from 2015–16 recessions.

AIRLINE FINANCIALS

One of the most important short-term drivers shaping the airline industry has been the large fall in the price of oil. Capacity decisions, including aircraft retirement, route planning, and pricing were all influenced by the input cost of fuel. The lower price of oil tempts airlines into backsliding on their strategy of disciplined growth, as it reduces the pressure to cut costs and capacity.

The rapid reduction in the barrel price from USD 100 to USD 30 made a massive difference to the shape of the industry; particularly in an industry which typically records such low profit margins.

Beyond the obvious near-term positive impact on balance sheets and cash flows, there is the ever-increasing threat of overcapacity. The glut of available seats has impacted ticket prices, leading to significant fare discounting. The market became even more strongly stimulated by supply driven growth, in the form of lower air fares that may not be sustainable over the long run.

The current economic performance of the airline industry is no guarantee of future results. Performance, by definition, is a snapshot of the past. Profits may now erode and gains may be wiped out with rising oil prices, bringing the profitability stake back to the rare and the few.
The ability to shift towards sustainable revenue unit growth, instead of aggressive capacity expansion, is crucial to set the table for margin sustainability in the years ahead as oil price rises and labor unions demand better working rules after years of wage austerity and massive layoffs.

A three-year long slump in oil price has resulted in a hugely positive financial impact on the airline industry’s costs, but airlines must consider the importance of capacity discipline so that profits can outlast the fuel cycle.

Competitive cost structure is critical to long-term sustainability. The extent to which rising fuel costs affect profitability in the airline industry depends on the ability to push up unit revenue and, hopefully, margins.

The airline industry is notorious for its boom and bust cycles and is unforgiving to airlines that are unable to adapt in time. The fluctuations in the marketplace put the carriers under severe pressure to sustain profitability, making fleet optimization critical in a variable business cycle.

In a high-volume, low-margin environment, it is obvious that a competitive cost structure remains strategically important for business sustainability, but greater control in matching aircraft capacity to market demand results in resilient profit growth with a greater percentage of higher-fare passengers, increasing both yields and load factors.
The single-aisle sector will undergo either a fundamental change or an evolution, once it proves equally inefficient to be deploying larger single-aisle aircraft with more seats than can be profitably filled. Even from an operational point of view, their size means that the number of airports these aircraft can serve today is limited.

The bottom line is that this will be another great year for the industry, but the peak of this particular cycle is behind us. 2018 is expected to be the ninth year in a row of aggregate profitability, but the industry is facing a soft landing.

The key to sustainability for an airline will be less about adapting its network to its capacity, and more matching capacity to its network. Some of the world’s most profitable airlines today operate numerous fleets and sub-fleets, tailored to various missions. A synonym for complexity can also mean sophistication, and a more diverse fleet, if well-managed, can be a profitable one.

AIRLINE BUSINESS STRATEGY

In today’s highly competitive environment, the marketplace is continuously changing. The landscape of the airline industry can no longer be defined by the differences between Full Service/Regional and Low-Cost Carriers. Evolving airline business models as well as product offerings are bringing more value to travelers in a range of ways. A wider array of service offerings better match airlines’ products with customer values.

The “adapt or die” motto has never been more relevant than it is today. Resilient strategies and a more nuanced competitive positioning will be increasingly important. Already, some airlines are leaving no stone unturned in trying to find new sources of revenue and cost savings.

Nearly every major airline has undertaken structural reforms in order to adapt to the new landscape, resulting in the convergence of business models. Multiple brands and business models have demonstrated themselves as an actual alternative to serve all passenger profiles. Until not so many years ago, it was almost unthinkable for FSCs to be charging for on-board meals and drinks, checked luggage, seat selection, and so on. FSC’s basic economy fare, which strips out amenities like checked baggage and advance seat assignments, is now a competitive tool against discounters.

LCCs meanwhile were true to their “no frills” mantra, with few ancillary products offered that could enhance one’s journey. Alas, what is possible is continuously being redefined.
Evolving Business Models

“Basic Economy” Class

Full service carriers

LCC Arm

Fleet Flexibility

Seat Assignments

Long-haul Flying

Hub-feeding Operation

Low cost carriers

Focus on Business Passenger

P2P Operation

Regional carriers

Business Markets

ACMI Operation

Like LCCs, some FSCs now have a lower-cost division operating for the mainline and another more supranational dedicated LCC division. Like a traditional Full-Service Carrier, the long-haul LCC sector is no longer experimental and is becoming more mainstream. One of the last real barriers between FSCs and LCCs may be challenged in the near future: co-operation between the two, in the form of code-sharing, feeding each other’s networks, mutually improving each other’s connectivity. Some LCCs are also making use of non-traditional strategies, such as multi-fleet type, loyalty programs and sales through global distribution systems to premium customers.

In this context, aircraft with up to 150 seats will form an ever more integral part of the global air transport ecosystem, bridging a gap in the market between the higher end of regional aircraft and the lower end of mainline narrowbody aircraft.

These aircraft are optimized to deliver profitability per seat through right-pricing and competitive cost structure, tapping the acute equipment gap created by the unavailability of efficient aircraft in the segment for several years. Its versatility will be put to full use worldwide, feeding complex bank structures or pioneering new markets in point-to-point operation where a narrowbody aircraft could only be deployed on a low-frequency basis — if at all. As secondary and tertiary cities are poised to lead the demand for new air travel, the segment is ready to embrace this growth momentum.

While cost remains a key competitive factor, it is no longer the sole driver to sustain a solid financial performance. Profit and returns are better measures of success. It’s not only revenue management strategies that need to be improved, airline assets (fleet, network) will also need to be optimized in order to get the most out of yields and generate higher returns.
AFRICA JOINS FORCES

Johannesburg, South Africa
The launch of the new “Single African Air Market” and consequent attenuation of barriers will create a new environment to foster growth in many sectors in Africa, expanding tourism and enabling higher volumes of trade.

With more options available, airlines will be able to significantly improve their network, offering non-stop services to more destinations and therefore profitably stimulating traffic through extensive supply-demand balance on long-thin markets.

Aircraft capacity is still largely unmatched to market demand, leading to undesirable load factors throughout the continent. Right-sized aircraft may be used as a tool to avoid price wars and seek profitability.

### AFRICA

#### ECONOMIC & TRAFFIC GROWTH

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#### NEW DELIVERIES

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#### FLEET IN SERVICE – UP TO 150-SEAT SEGMENT

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<td>Seats</td>
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MARKET LIBERALIZATION PAVING WAY FOR STRONGER GROWTH

Africa is expected to grow by 4.8% in the next 20 years, seeing an extra 270 million passengers a year for a total market of 400 million passengers. Some countries stand out amongst the fastest growing in the world, superseding the continent’s average and reaching a compound growth rate of over 7.2% per year. This shows that the region’s full potential is on the verge of being unleashed.

This projected growth will be pushed mainly by the opening of Africa’s skies, coming through the long anticipated fulfillment of the Yamoussoukro Decision. After the period of analysis and discussion, 26 African states have already committed to the implementation of the concept, adhering to the “Single African Air Transport Market.” This initiative is aimed at upgrading connectivity in the continent, removing barriers, reducing fares and consequently stimulating economic growth.

A greater development in infrastructure is still required for the single market to fully succeed. Some countries are leading the way towards this goal, as in the case of recent improvements made in Ghana, Rwanda and Ethiopia. Others should follow suit in time, as the aviation industry proves itself an important driver of prosperity.

COUNTRIES SIGNED UP TO THE SINGLE AFRICAN AIR TRANSPORT MARKET

A total of 26 countries:

- Benin
- Burkina Faso
- Botswana
- Capo Verde
- Central African Republic
- Chad
- Congo
- Côte d’Ivoire
- Egypt
- Ethiopia
- Gabon
- Gambia
- Ghana
- Guinea
- Kenya
- Liberia
- Mali
- Mozambique
- Niger
- Nigeria
- Rwanda
- Sierra Leone
- South Africa
- Swaziland
- Togo
- Zimbabwe

Source: African Union – May 2018
CONNECTIVITY DEVELOPMENT

With the implementation of the Single African Air Transport Market, African airlines will be released from the bonds of regulatory limitation – meaning that passengers will be able to easily reach destinations within the continent, previously only available through lengthy connections or not available at all.

Currently 25% of African markets are not directly served and over 60% of routes have less than one daily frequency, showing that there is great potential coming from liberalization. The latent growth can be accessed through opening new direct markets and the consequent stimulus of intra-regional and domestic connectivity, resulting in new possibilities for passengers.

The geographical vastness of Africa, paired with budding volume of traffic, implies that many of the new markets to be created will likely be long and thin routes – too long for turboprops, but in volume too small for narrowbody aircraft. In this scenario, jets with up to 150 seats gain relevance as the perfect tool for exploring sustainably such markets, either as point-to-point connectivity providers or as hub developers.

AFRICAN MARKET SERVICE PROFILE

Source: Sabre, Embraer – December 2017
PROFITABILITY CHALLENGES TO OVERCOME

Although progress has been achieved over the past few years, airline profits have remained in the developmental stage as the industry endured external factors such as low commodity prices and geopolitical unrest. While there are still challenges ahead, the outlines of a new development cycle become clear, providing Africa with the opportunity to advance – given the right tools are at hand.

In this scenario, capacity strategy is key, and may actually help airlines reach a whole new level. Currently the majority of seat capacity in Africa is located above the 150-seat segment, while 70% of intra-regional and domestic markets operated by narrow-bodies have on average up to 130 passengers on board in each flight. This results in average load factors of 58.6%, according to IATA, indicating the inability of expansion of air services with current fleet configuration.

Adding to this, liberalization is bound to increase competitiveness between African airlines, generating an overall decrease in passenger fares. In such an environment, a right-sized aircraft, designed with capacity to match market demand while ensuring financial return, is fundamental in avoiding price wars and subsequent steeper descents in profitability.

SOURCE: Sabre, Embraer – March 2018
ASIA-PACIFIC EVOLVES
In the coming decades, Asia-Pacific’s middle class is expected to grow by hundreds of millions, unlocking a vast number of opportunities in the region and moving the air traffic center of gravity from west to east.

China intensifies its efforts to implement structural improvements aiming to increase the quality of its air transportation system.

India struggles with infrastructure issues to respond to one of the highest air transport growth rates in the world.

Regional aviation policies and hub by-pass presents alternatives to avoid large and congested hubs.

### ASIA-PACIFIC

#### ECONOMIC & TRAFFIC GROWTH

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#### NEW DELIVERIES

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#### FLEET IN SERVICE – UP TO 150-SEAT SEGMENT

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The Organization for Economic Cooperation and Development (OECD) projects that the Asian middle class will reach 3.3 billion people by 2030, which has huge implications on the region’s air traffic.

IATA declares that routes to, from and within Asia-Pacific will see an extra 2 billion annual passengers by 2037, for an overall market size of ~3.5 billion, with an annual average growth rate of 4.6%.

Essentially, two important issues need to be addressed to enable this expectation to materialize in a sustainable way, namely: the lack of infrastructure and quality of service.

Over the last few decades, China has been building a strong infrastructure to respond and support its economic and air traffic growth. According to the Civil Aviation Administration of China (CAAC), 23 new civil airports are under construction, building up to a total of more than 250 by 2020.
More recently, China has been dedicating efforts to implement several actions by solving quality issues in the air traffic system, as such problems would hinder further growth. The plan covers major weaknesses in systems, ground service, engineering and human resources.

Through its Regional Aviation Policy, China is improving its connectivity level as start-up airlines are exploring opportunities to reach small and mid-sized cities with up to 99-seat aircraft.

**INDIAN BOOSTING**

According to IHS Markit, India will continue its strong pace of economic growth, remaining solid at 7% over the next 10 years. Year-on-year, this growth is bringing millions of people into the middle class and to higher levels of consumption. In line with what happened in China in 2003, India is expected to cross the line of US$ 2,200 in GDP per capita by 2018 (IHS Markit), this milestone will strengthen the already overwhelming current traffic demand.

However, the top six airports in India handle 60% of total movements in the country, which indicates a highly concentrated traffic. Airports like Hyderabad, Bangalore, Mumbai and Delhi are already beyond their peak capacity. This is creating pressure for more investment, as the infrastructure is not following the air traffic growth.
OPTIONS FOR A MORE CONNECTED AND PROFITABLE INDIAN INDUSTRY

As an important initiative to improve the level of connectivity in the country, the Regional Connectivity Scheme envisaged by India’s DGCA is favoring connecting under-served (and even unserved) airports, located in second and third-tier cities in most cases.

Also, considering the possibility of a new approach to expand the transportation service and its profitability, India could take advantage of a more flexible fleet, using it as a strategic tool to open new routes and connect secondary markets by bypassing congestion in big hubs. Adding non-stop flights and frequency would enable the country to build a more connected and profitable air industry, flying right-sized aircraft that offer lower risk and reap higher yields.
Economic recovery in the region and optimism coming from the staging of the 2018 World Cup brings new vigor to the airline industry. Factors such as low inflation and a stable exchange rate favor an increase of both domestic and international air traffic.

New business models are appearing in the region, following the European trend and putting pressure on the already challenging yield environment.

Network remains highly concentrated, as most of the capacity available is focused on a few central airports.

### AT A GLANCE

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### ECONOMIC & TRAFFIC GROWTH

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AN EMERGING CIS

The economy of the Commonwealth of Independent States is back on track, seemingly leaving the 2015–2016 recession behind. According to IHS Markit, GDP for the region has grown by 2% in 2017 – which is the best result in five years – and is expected to keep the pace as currency stabilization, inflation control and higher commodity prices favor economic activity.

Although this is a notable turnaround from the recession that saw a contraction of 2.2% at its height in 2015, geopolitical ambiguity still lingers. The current diplomatic tension between Russia and the United States, as well as the possibility of additional sanctions affecting other CIS countries means that the whole region remains somewhat vulnerable.

On the other hand, good relations with the European Union, as well as strong historical bonds with Western Asia and China mitigates risks.

CHANGING WINDS FOR AVIATION

The return of economic progress, as expected, brings new optimism to the aviation industry. According to IATA, RPK growth in the Russian domestic market accelerated to 10.1% in 2017, the fastest rate since 2014, a result similar to those displayed by other CIS countries. This trend shall reverberate over the next years, as the 2018 World Cup boosts investment in tourism and infrastructure, attracting millions of visitors to the region.

Internationally, several factors favor the increase in passenger traffic: overall currency stabilization and inflation control, meaning that the population has gained more spending power; the recovery of diplomatic relations between Russia, Egypt and Turkey, lifting previous traffic restrictions to these popular Russian tourist destinations; and recently established visa-free regimens in Ukraine, Georgia and Moldova, fostering connection with the European Union.
BUSINESS MODEL DIVERSIFICATION

All taken into account, it appears that aviation in the CIS is on the upward curve, and airlines are working to adapt and benefit from the momentum. Indeed, diverging from traditional full-service/legacy carrier model and following Europe, a few companies are creating their own low-cost branches to compete in the market.

The obvious upside is passenger stimulus and a push for the airspace to become more democratic, as country barriers continue to drop. On the other hand, traditional airlines are under pressure to lower their fares, adding even more stress to the already challenging yield environment.

NETWORK DECENTRALIZATION

While competitiveness is increasing in high-density markets, where low-cost carriers usually thrive, there is still plenty of room for profitable operations on regional and under developed routes. In fact, while the main air carriers have built the core of their operations around each country’s main airports, some competitors are already working to strengthen their regional base with the use of 70–150 seat jets – and are growing consistently while doing so.

There is a long way to go, as network centralization around country capitals is still keeping connectivity and traffic from realizing their full potential. The majority of passenger traffic in the CIS is concentrated on the 5 main airports – with 3 of those in the Moscow region. Conversely, over 30% of the airports still have emerging air access, with scheduled air services to only one other airport. This scenario indicates that, for the near future, demand will call for these secondary markets to be better served, where 70-150 seat jets can be optimally placed.

NUMBER OF AVAILABLE DESTINATIONS

Source: Sabre, Embraer – March 2018
Low oil prices have been driving the unprecedented profitability of the industry. The time is perfect to promote necessary changes, mainly regarding capacity discipline.

Political uncertainty raises questions on Europe's freedom of airline operation, freedom of people movement and the United Kingdom's economy.

Recent airlines' failures drives the market for consolidation.

The increasing participation of Low Cost Carriers will drive more business model alternatives.
EUROPEAN WINDFALL

As with many other companies around the world, European flag-carrier airlines are crossing a period of unprecedented profitability – which has to be celebrated, but should also be seen as a window of opportunity to implement necessary changes.

The current level of profitability is due – mainly – to the windfall from low fuel prices. While a focus on short-term thinking is understandable, a long-term approach is critical. The industry structure has not changed, and the pressure on yields and market-share gains are likely to continue unabated.

Industrial unrest across both the major FSCs and now LCCs too is a trend that will require close monitoring and will require compromise from airline executives and unions alike. This issue is closely linked to that of crew shortage (not only pilots but cabin crew also) in Europe, and will require successful resolution for crew not to be seduced by more attractive opportunities in the Middle East and Asia-Pacific.

OIL PRICES VS. AIRLINE PROFITS

Source: IATA, Embraer – June 2018
POLITICAL UNCERTAINTY

Exactly what the United Kingdom’s exit from the European Union means in reality may not be clear for a number of years, but it could involve changes to:

- **Freedom of operation:** EU and UK airlines are free to set their own capacity, frequency, and pricing across borders. These freedoms under the European Union may just be continued, should the United Kingdom join Norway and others in the European Common Aviation Area;

- **Freedom of movement:** for passengers traveling across Europe to work, visit friends and family, and take vacations.

- **UK economy:** IATA suggests that British GDP could be 2.5 to 3.5 percent lower in 2020 than it would have been had they remained within the EU, reducing total UK passenger demand by 3.0 to 5.0 percent.

AIRLINE INSOLVENCY & THE CONSOLIDATION PROCESS

A glut in capacity prompted by the low oil price compels carriers to slash fares in a battle for market share. The collapse of Darwin Airline highlights just how cut-throat competition in the European short-haul market has become. Airberlin and Monarch are other meaningful examples of the same issue.

In this scenario, will the smaller carriers fade away or soldier on? The intra-region capacity share of the top three carriers (or carrier groups) is 75% in US, and 31% in Europe. However that statistic in itself underscores the differences between the two regions and how the consolidation that is occurring in the former may take much longer to take root in the latter – if at all. Indeed, for all the airline failures Europe has seen, certain governments seem undeterred in the sponsoring of new “flag carriers”, or the resurrecting of old ones.

It should also be born in mind that in addition to regulatory approval for further consolidation, unions will also play an important role in the outcome.
Against this background, nearly every major airline has undertaken major structural reforms in order to adapt to the new landscape, resulting in the convergence of the two business models. Not that long ago, it would have been unthinkable for FSCs to be charging for on-board meals and drinks or checked luggage, though they have followed the LCC model of commercial aviation.

While such Legacy Carrier strategies have served to delay the advancement of the LCCs, it has not been enough to stop such momentum. Especially over the past two decades, low-cost airlines have aggressively focused on cheap fares, resulting in a rapid growth of market share, changing the landscape of air transportation in the region.

Source: OAG, Embraer – December 2017
INTRA-EU EVOLVING BUSINESS MODELS

LCC and FSC business models are progressively displaying a set of similar strategies. At one end of the spectrum, some FSCs now have a lower-cost subsidiary operating for the mainline, while others have a supranational dedicated LCC division; Conversely, the LCC sector is becoming more mainstream and experimenting with FSC strategies, such as multi-fleet type, loyalty programs and sales through global distribution systems to premium customers.

One of the last great taboos between FSCs and LCCs may be challenged in the near future: co-operation between the two, in the form of code-sharing, feeding each other’s networks, mutually improving each other’s connectivity. Though, before that can become a reality, some questions like “how viable are NB as hub feeders?” and “how can airlines harmonize a long-haul business product with an LCC on the regional level?” need to be answered.

In the meantime, the regional business model is also going through a diversification from the traditional hub feeding operation with a growing role in high-yield business markets, where high frequency is extremely important to strengthen airline presence. A significant portion of the flights offered in shuttle markets are performed by Regional Carriers, where right-sized aircraft guarantee adequate service-level to maintain market share and capture premium passengers.

ACMI LEASING MODEL

Europe is an ACMI powerhouse, responsible for roughly 40% of all ACMI companies and fleets installed today. From the lessee standpoint, ACMI brings a lot of value, since it allows the carrier to capture high season peak demand, avoid long-term asset commitments when launching a new operation, cope with AOGs, and even mitigate impacts of planned maintenance events that would disrupt the schedule. The “bmi regional”, for example, ensures it can launch a white tail aircraft within 2 hours of confirmation.

Over the last 5 years, European ACMI business has grown 11% annually in terms of fleet leased, and there is room for further growth. Several of opportunities for outsourcing low-density routes to regional operators with lower cost base are sprouting, allowing both majors and low cost carriers to bring-in a more efficient airplane to serve thin routes without adding complexity to their narrowbody operation.

The ACMI market in Europe will however need to evolve. There are at least 40 independent ACMI operators in 20 countries throughout the region (the UK and Spain standing out as having the most), yet there is a high degree of fragmentation and fragility. This sector too will undoubtedly experience a degree of consolidation in the years ahead.
LATIN AMERICA RECOVERS

Salvador, Brazil
Latin America is returning to the path of growth based on important economic reforms in the largest countries of the region.

Challenges on infrastructure and regulations are driving many actions that support traffic growth.

Airlines’ profitability is still fragile, right-sizing remains a strategic option for providing better margins and enhanced connectivity.

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**LATIN AMERICA**

### ECONOMIC & TRAFFIC GROWTH

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### FLEET IN SERVICE – UP TO 150-SEAT SEGMENT

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<tr>
<td>810</td>
<td>1,600</td>
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ECONOMIC RECOVERY

After a period of instability, some of the largest economies in the region are promoting structural reforms, which are bringing more confidence to the region for a new period of growth. Brazil and Argentina are good examples of these countries, promoting labor and pension reforms, respectively.

Based on these recent activities and other coming changes, the IHS Markit forecasts that the region’s GDP will grow around 1.6% in 2018. Over the medium term, growth is expected to remain subdued at 3.2%.

PERSISTENT TRAFFIC GROWTH

Even with an unstable scenario as presented in previous years, traffic is continually increasing in the region. For 2017, Latin American airlines posted a growth of 7%. This growth retake corresponds with general economic improvements.

LATIN AMERICA TRAFFIC GROWTH

Source: Sabre, Embraer – December 2017
The traffic growth adds even more pressure over an already congested infrastructure. Governments are beginning to address the issue as a matter of high priority.

In Brazil, where 10 airport contracts have already been granted to private companies in recent years, the government is considering more than a dozen airport operations into new concession agreements, which will allow new and very welcome investments into the system.

In Colombia, the modernization of transportation infrastructure is one of the main targets of the Federal Government, which is investing billions of dollars to reform and build new terminals in 97 airports, all over the country.

A CALL FOR REGULATORY REDESIGN

One of the largest bottlenecks of aviation in the region is regulation, which is gently undergoing meaningful change. Argentina’s government, for instance, has approved changes to its regulatory framework, granting routes and operations to new carriers. Since then, the country has already received applications for hundreds of domestic and international routes from a dozen airlines.

Although the Regional Aviation Development Program in Brazil is stalled, important actions are promoting the maturation of Brazil’s aviation market. The Congress and Federal Government are pointing to a gradual end to limits on foreign investment in local airlines. This action can allow relief in the level of competitiveness in the region, improving connectivity as well as the level of service in the long-term. “Open Sky” deals are also taking place in the Congressional agenda, following on from the recent approval of the agreement between Brazil and the USA.
Nowadays, more than 70% of the Brazilian commercial transportation system is composed by low/mid-density markets (up to 400 pax/day), which are served in the main, by fewer than one frequency per day. In the future, we can expect a similar outlook as mid-density markets have increased their share year-by-year previously. To provide a proper service in such a market, a right-sized aircraft is proven to be the best solution.

Latin America has many of the essential elements to build an even better future in its aviation story: modern and efficient airlines, great demographics and geographical characteristics and a growing middle class. Combining these elements with the right balance between infrastructure, a modern regulation and a right-sized fleet can unlock the huge potential of the region, allowing it to become better served, and a profitable environment for airlines.

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</tr>
</thead>
<tbody>
<tr>
<td>Low-density</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Mid-density</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-density</td>
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<td></td>
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</tbody>
</table>

Source: Sabre, Embraer – March 2018
MIDDLE EAST RECONFIGURES

Abu Dhabi, UAE
Housing one of the world’s busiest airports, the Middle East is consolidated as a global hub, providing efficient connectivity to regions like Asia, Africa and Europe.

After decades of strong international traffic growth, the region is starting to present a growth slowdown as flow restrictions take place.

As an ever-evolving market, airlines from the region can find, with a more flexible fleet, new ways to grow.

Airlines in the region still strive for better margins as they remain in a low profitability environment.
A HOME FOR GLOBAL CONNECTORS

In the last few decades, the Middle East emerged as an important global hub, constantly adding new passengers to its system, especially when we consider international traffic. As a great option, geographically, to efficiently connect regions such as Asia, Africa and Europe, the airlines based in the Middle East have been taking the opportunity to expand their operations and footprint.

GROWTH SLOWING DOWN

After the period of strong growth, traffic in the region has started showing signs of a slowdown. In 2017, the international traffic rose ~7%, far from the CAGR of ~15% seen in the first decade of the millennium. Factors including limitations on carrying large electronic devices on board, as well as US travel restrictions for certain countries in the region contribute to the slowdown.

Source: Innovata, Embraer – March 2018
AN EVER-EVOLVING MARKET

The current fleet in service illustrates the region’s focus on international markets. With almost 90% of the fleet having more than 150 seats, the capacity has been designed almost exclusively to serve long-haul routes. In order to innovate and improve frequency and connectivity of the local markets, the need to right-size is ever present.

MIDDLE EAST – FLEET IN SERVICE

- Up to 150 seats: 12%
- >150 seats: 88%

As the international market presents problems for strengthened growth, a look to the domestic market can present alternatives for the region. Countries like Turkey and Iran, for instance, have deep wells of local demand which can feed the hubs, for which there will be no aircraft more versatile than 70 to 150-seat jets.

LOW PROFIT ENVIRONMENT

According to IATA, net profits for the region in 2018 are forecast to be only slightly above breakeven, at US$ 0.6 billion, with operating margins of ~1%. Relative to 2017 (US$ 0.3 billion and 0.6%, respectively), there is a timid improvement, but still far from industry demand for sustainability.

More connectivity based on a more flexible and right-sized fleet can give the Middle East more efficient options to encourage profitability growth.
NORTH AMERICA ENDURES
| World Regions | North America |

**AT A GLANCE**

- Tapping the gap between large regionals and medium narrowbodies is key to efficiently serve mid-size markets with mainline capacity.
- Pilot shortage is real, but airlines are creating alternatives, while regulators are working their way toward potential improvements.
- Regional capacity is paramount to US connectivity, and this fact is set to continue. For the next generation airlines will seek the most efficient solution when replacing 600 aging airplanes over the next decade.

### NORTH AMERICA

**ECONOMIC & TRAFFIC GROWTH**

<table>
<thead>
<tr>
<th>GDP</th>
<th>RPK</th>
</tr>
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<tbody>
<tr>
<td>2.0%</td>
<td>2.7%</td>
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</table>

**NEW DELIVERIES**

<table>
<thead>
<tr>
<th>Up to 150-seats Jets</th>
<th>TPs</th>
<th>150-210 Seats NB</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,520</td>
<td>260</td>
<td>4,120</td>
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</tbody>
</table>

**FLEET IN SERVICE – UP TO 150-SEAT SEGMENT**

<table>
<thead>
<tr>
<th>2017</th>
<th>2037</th>
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<tbody>
<tr>
<td>3,680</td>
<td>5,250</td>
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</table>
INDUSTRY OVERVIEW

While North American airlines still retains the crown of being, collectively, the most profitable in the industry, the fundamentals continue to slowly fade. EBIT margins have declined from the all-time high 14.4% back in 2015 to a respectable 9.9% forecasted by IATA for 2018. Pricing power, measured in Passenger Revenue per Available-Seat-Mile (PRASM) is also declining since then.

Capacity inflow in the system has been very strong since 2015 – way beyond GDP growth rates. It has only been possible at unit revenue expense, with airlines entering into price wars for the very same passenger and trying to stimulate traffic through lower fares.

Source: IHS Markit, Sabre, Embraer – March 2018
Correlation: (-0.67)
The Small Narrowbody Concept

There is no better way to increase profitability and expand at the same time than using right-sized aircraft, adequately serving peaks and off-peaks, thin and trunk routes with the correct capacity. Currently, for North American airlines, 45% of the flights undertaken by jets with 150 to 210-seats carry fewer than 130 passengers. That’s a reflection of existing fleet-in-service in the region, and represents a huge opportunity to improve return on invested capital. Deploying the so-called small narrowbodies at 10–35% less pilot pay cost (comparing 120-seaters versus 160-seaters), nicely taps the existing capacity gap between large regional jets (76-seats) and mid-size narrowbodies (160-seats).

Aside from new markets, the small narrowbody also enjoys the huge benefit of directly replacing aging fleet in the 100 to 150 seat segment, since North American carriers are, collectively, the largest operator of this aircraft type, nearing 1,500 jets in service with an average age of 16 years.
PILOT SHORTAGE

A shortage of pilots is a real threat to the airline industry, but many steps have been taken into the right direction. In November 2017, the FAA’s Air Carrier Training Aviation Rulemaking Committee (ACT ARC) issued its recommendations to provide an alternative pathway to the famous “1,500-hour rule”. The Committee’s proposed modification would allow new hires to obtain a certificate with restricted privileges after completing an Enhanced Qualification Program (EQP). With a predefined curriculum, the program would be executed mostly by regional airlines with help from the FAA.

In short, this new way of thinking equates hours in classrooms and simulators with experience operating an aircraft by accumulating “credits” to reduce the total number of required flight hours.

On top of that, airlines are pushing to solve the issue themselves. Offering students sponsored education in exchange for employment commitments seems to be working. New pilots are able to reduce their initial training costs and they have a clear, structured career path with a major airline.

REGIONALS WILL PREVAIL

With regional carriers being the only source of air service in 64% of all US airports and carrying 42% of all US passengers, 50 to 76-seaters continue to be paramount to the existence of US domestic connectivity.

Opportunities in the regional segment are mostly driven by replacing existing aging regional fleets of more than 600 units, which are reaching mid-life and are susceptible to replacement by next generation airplanes, bringing more revenues and comfort when compared to 50-seaters, and also more cost efficiency to the system compared to older 70/76-seaters.

REGIONAL AIRCRAFT REMOVAL PROJECTION

Source: Flight Global, Airlines, Embraer – March 2018
DATA SOURCES

ALL ANALYSIS DEVELOPED USING DATA FROM:

- Global Insight
- The Economist, OECD, World Bank, IMF, McKinsey Global Institute
- OAG
- ICAO, IATA
- A4A, A4E, CAA, AEA, ALTA, CAPA, AFRAA
- CAAC (Civil Aviation Administration of China)
- Sabre
- Flight Global Fleet Analyzer
- Innovata
- Embraer Market Intelligence
- Airlines

For more information, please visit: embraermarketoutlook2018.com

REGIONAL DEFINITIONS

- North America
- Latin America (includes Mexico & Caribbean)
- Europe (includes Israel)
- Russia/CIS
- Africa
- Middle East (includes Egypt & Turkey)
- Asia-Pacific (includes China)