



ボーイング民間部門 と研究部門の概要

根岸英一

ボーイングリサーチ&テクノロジージャパン、ダイレクター
飛行機ビジネスプロフェッショナル養成講座

令和二年、十二月十二日

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 - 環境への取り組みや目標
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5. リサーチ & テクノロジー部署
 - イノベーションの集中点
 - 研究センターの役目
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自己紹介

役職 (ボーイングリサーチ & テクノロジージャパン、ダイレクター)

業務責任

今の仕事の主な役割は、ボーイング・ジャパンのサプライチェーン、大学や政府機関と関係を築くことです。航空産業が発展している、ここ愛知を拠点として、様々な技術のサポートや生産の需要に対応しています。

職歴

- ボーイング歴：十年 (ボーイング本社で五年、ボーイングジャパンで五年)
- ボーイング本社で五年、様々な民間航空機でプロセスエンジニアリングや生産工学
- ボーイングジャパンで五年、重工のサプライチェーンサポート

学歴

- 理学士：生産工学 (ワシントン大学, シアトル, ワシントン)
- 理学修士：システム工学 (南カリフォルニア大学、カリフォルニア、アメリカ)

資格

- リーンシックスシグマ



WHAT WE DO TODAY



民間航空機 (BCA)

Boeing 7-series family of airplanes leads the industry



グローバル・サービス

A dedicated services business focused on the needs of global defense, space and commercial customers



防衛・宇宙・セキュリティ (BDS)

One of the world's largest manufacturers of military aircraft and satellites and major service provider to NASA

Large-scale systems integration, networking technology and solutions provider



ボーイング・キャピタル・コーポレーション

Global expertise in innovative aerospace financing solutions



WHERE WE ARE



**\$76.6
BILLION**
in 2019 revenues

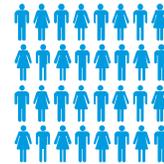
Products and services support
to customers in more than
150 COUNTRIES



Manufacturing, service and
technology partnerships with
companies around the world

Contracts with more than
12,000
suppliers globally

More than
**160,000
BOEING
EMPLOYEES**

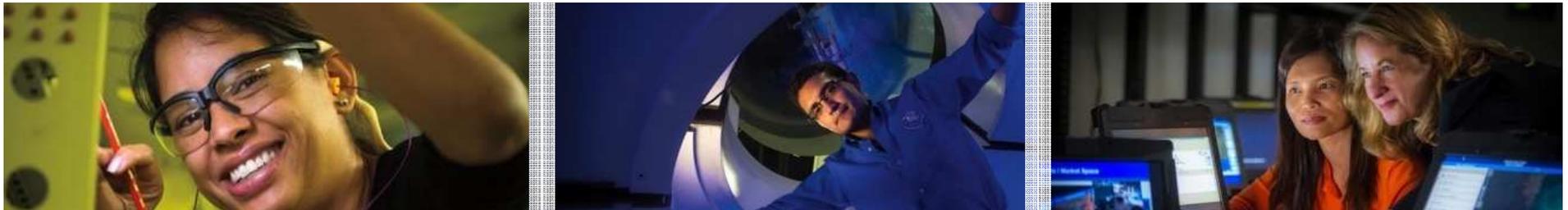


across the United States
and in more than
65 COUNTRIES

Research, design and
technology-development
centers and programs in
multiple countries



of commercial
airplane revenue
historically
from customers
outside the United
States



WHO WE ARE

Company Leadership



David L. Calhoun
President and
Chief Executive Officer



Stanley A. Deal
Executive Vice President,
President and CEO,
Boeing Commercial
Airplanes



Leanne Caret
Executive Vice President,
President and CEO,
Boeing Defense,
Space & Security



Ted Colbert
Executive Vice
President,
President and CEO,
Boeing Global Services



Greg Smith
Executive Vice President,
Enterprise Operations,
Chief Financial Officer



Michael D'Ambrose
Executive Vice President,
Human Resources



Brett C. Gerry
Chief Legal Officer,
Executive Vice
President, Global
Compliance



Timothy Keating
Executive Vice President,
Government Operations



Marc Allen
Chief Strategy Officer,
Senior Vice President,
Strategy and Corporate
Development



Michael Arthur
Senior Vice President
of Boeing, President,
Boeing International



Ed Dandridge
Senior Vice President,
Communications



Susan Doniz
Chief Information Officer,
Senior Vice President,
Information Technology &
Data Analytics



Greg Hyslop
Chief Engineer,
Senior Vice President,
Boeing Engineering,
Test & Technology



Uma Amuluru
Vice President,
Compliance



Grant Dixton
Senior Vice President,
Law



Dave Dohnalek
Senior Vice President,
Treasury



Kevin Schemm
Senior Vice President,
Finance



Chris Raymond
Vice President,
Chief Sustainability
Officer



William Ampofo
Vice President,
Enterprise Process
Council:
Supply Chain



Mark Jenks
Senior Vice President,
Enterprise Process
Council:
Program Management



Tony Martin
Vice President,
Enterprise Process
Council:
Quality



Bill Osborne
Senior Vice President,
Enterprise Process
Council:
Manufacturing

COMMERCIAL AIRPLANES 民間航空機 (BCA)

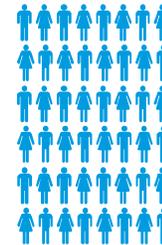

**\$32.3
BILLION**
in 2019 revenues

Offers a family of airplanes and a broad portfolio of aviation services for passenger and cargo carriers worldwide

Headquartered in the
**PUGET
SOUND**
region of Washington state
with operations in
several U.S. states



Approximately
**64,000
BOEING
EMPLOYEES**



Boeing airplanes represent about half of the world's fleet, with more than **10,000 jetliners** in service



80%
of sales
(by value) are
to customers
outside the United
States





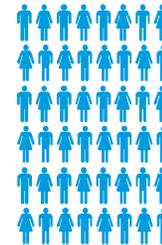
**\$26.2
BILLION**
in 2019 revenues

Core markets include weapons,
fixed-wing strike and integrated
missile systems

Headquartered in
**ARLINGTON,
VIRGINIA**
with employees in
21 countries and 47 U.S. states



Approximately
**33,000
BOEING
EMPLOYEES**



**FORMED IN
2002**
to integrate Boeing's
defense, space, intelligence
and communications capabilities

Focus markets include
military rotorcraft,
commercial derivatives,
human space exploration,
satellites, services and
autonomous systems

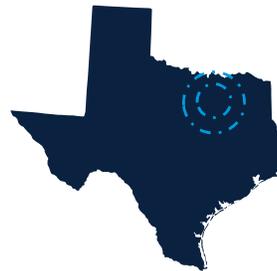


GLOBAL SERVICES グローバル・サービス


**\$18.4
BILLION**
in 2019 revenues

A dedicated services business
focused on the needs of
global defense, space and
commercial customers

Headquartered in the
**PLANO,
TEXAS**
area with operations worldwide



Approximately
**25,000
BOEING
EMPLOYEES**



FORMED IN 2017
to integrate the services
capabilities of the defense, space
and commercial sectors

INNOVATIVE DISRUPTER
generating a robust pipeline of
products and services for
customers worldwide

Designed for
faster customer
response and
operational agility,
with a streamlined
infrastructure





OUR PRIORITIES

Return the 737 to service safely

Rebuild trust

Focus on our values

Operate with excellence

Restore production health

Invest in our future

We'll achieve our priorities by empowering our people

Overview

日本との
パートナーシップ

民間航空機市場の
見通し

環境への取り組みや目標

コロナ感染予防対策

Overview

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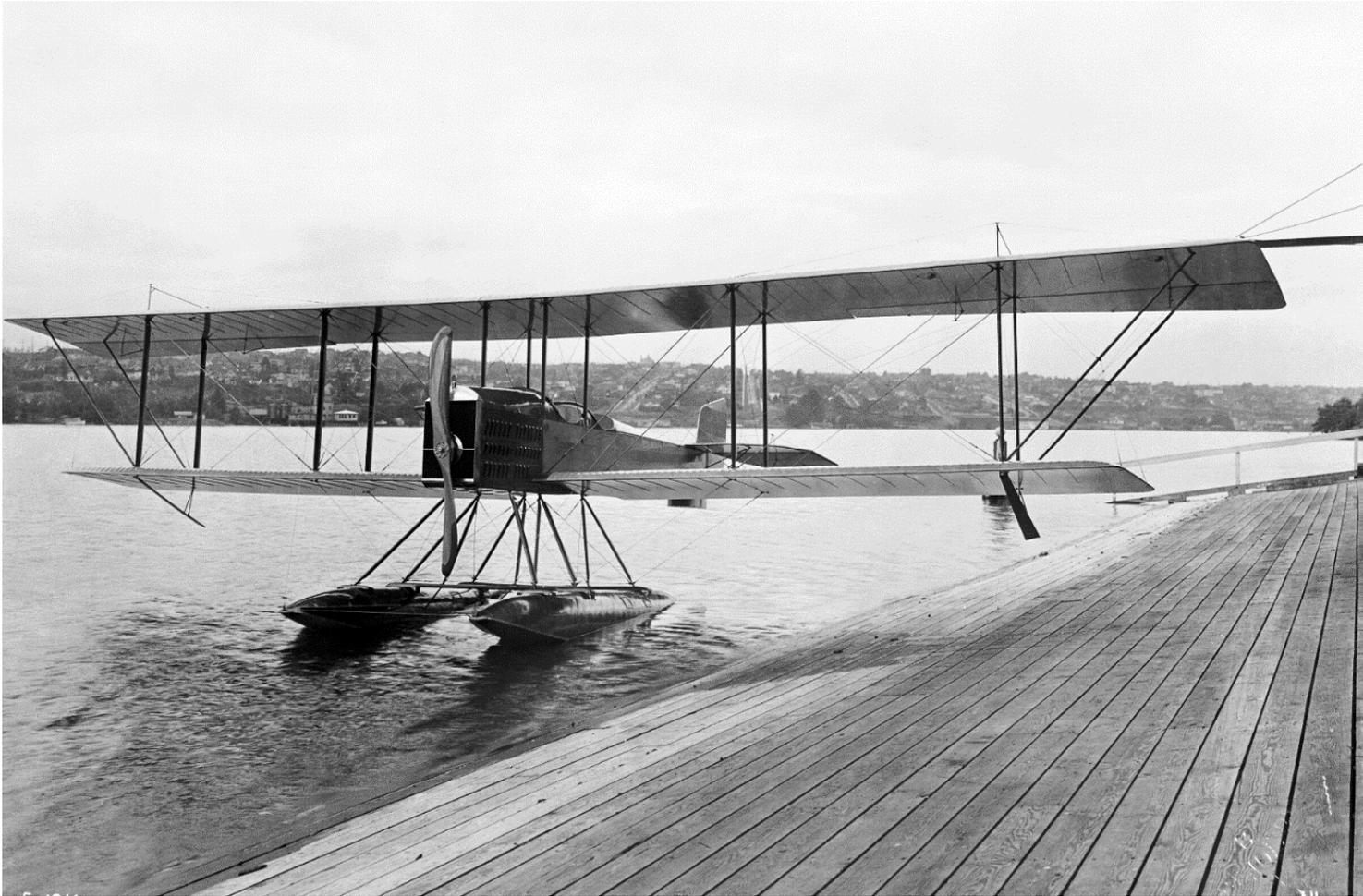
昔のボーイング



現在のボーイング



B&W



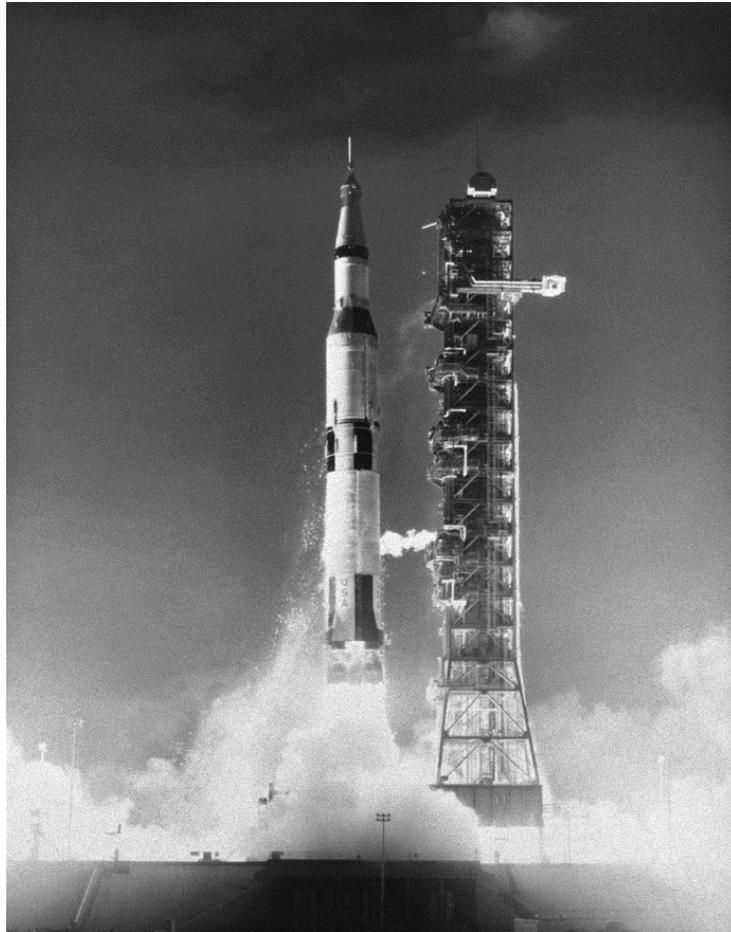
ボーイング 247



ボーイング 707



サターン V ロケット



日本との関係づくり



Bill Allen, president and CEO

The Boeing Company, 1945-1972

日本との関係づくり



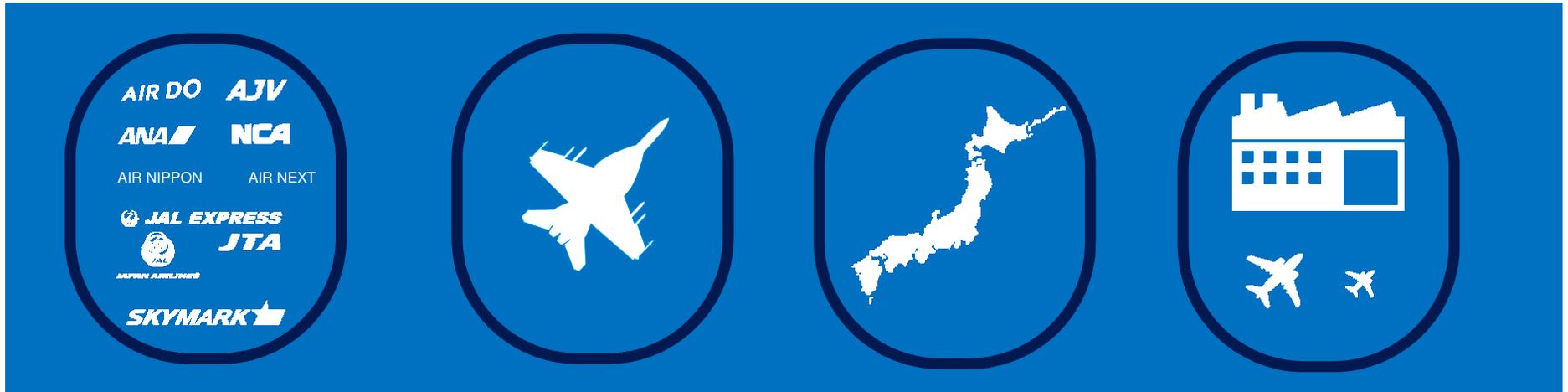
特別なパートナーシップ



Made with Japan: 日本企業とともに製造



日本におけるボーイング



80%
market share
1000
airplanes purchased
100+
787s in service
350,000
passengers/ day

65+
years
300
aircraft in
defense of
Japan

200
teammates
30
NPOs
supported
8
university
partners

150
suppliers
\$5B/ yr
procured
64,000
jobs supported

Made with Japan: 未来



Overview

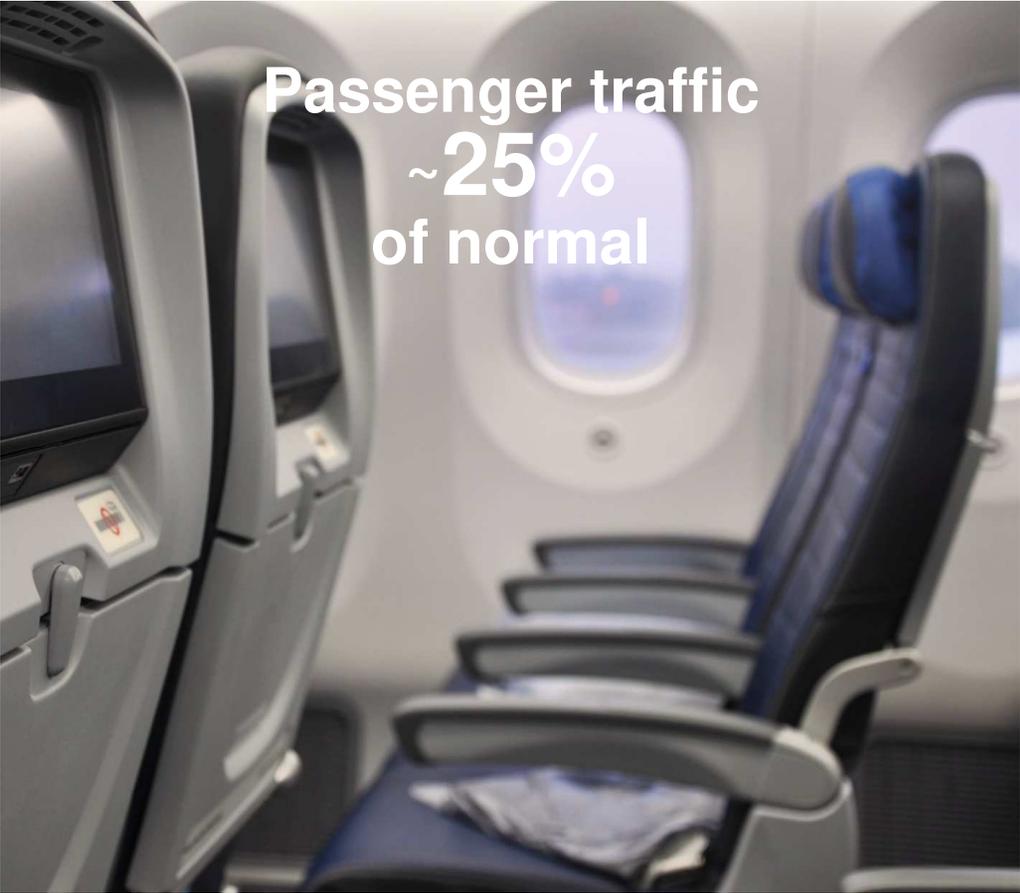
日本との
パートナーシップ

民間航空機市場の
見通し

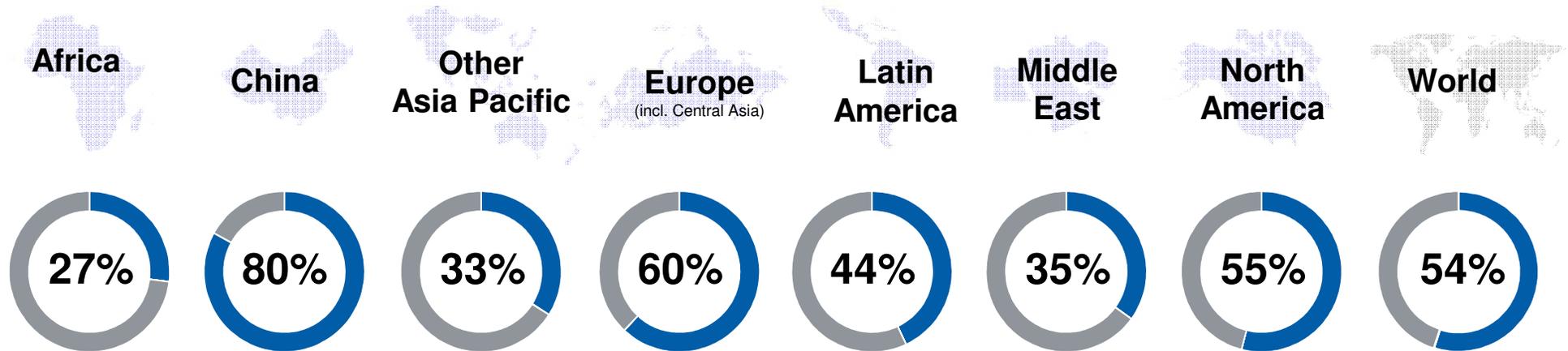
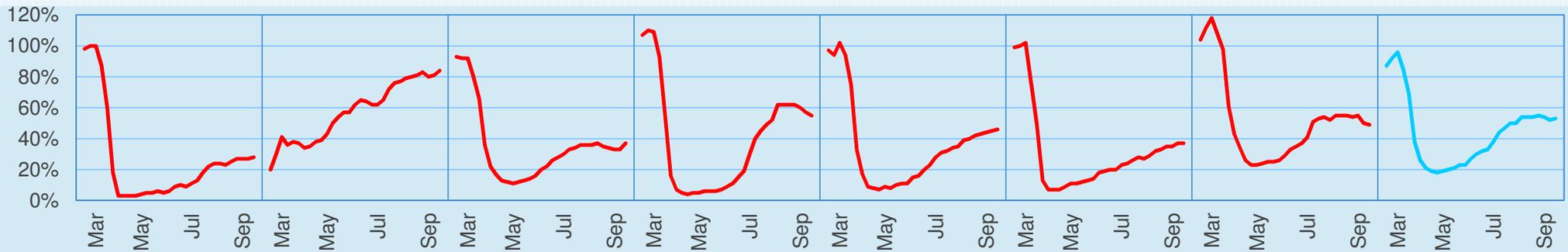
環境への取り組みや目標

コロナ感染予防対策

Commercial aviation dramatically impacted by global pandemic



Varied recovery paths across regions so far

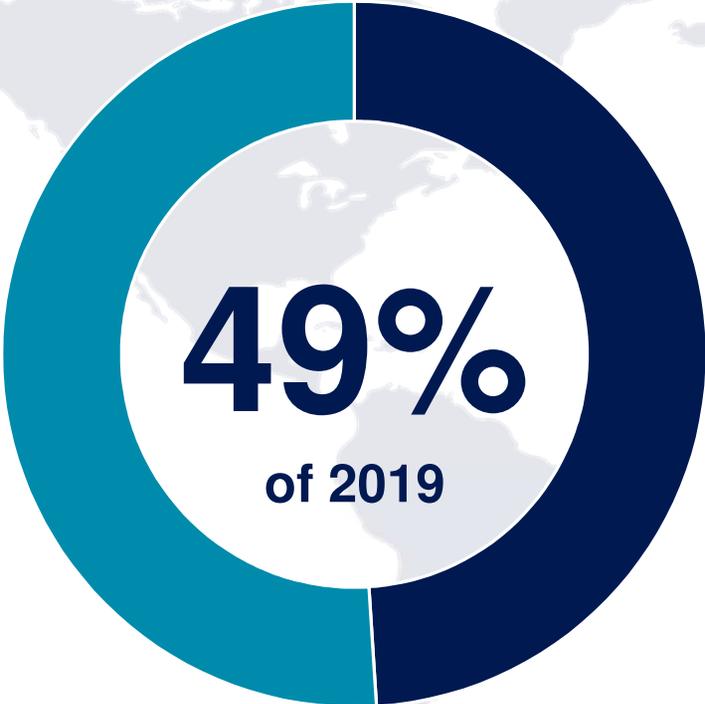


SOURCES: Weekly level of passenger operations through Week 38 (9/13 - 9/19) FlightRadar24, BR&T Europe, Boeing
Normalized based on 1/12-18 operations

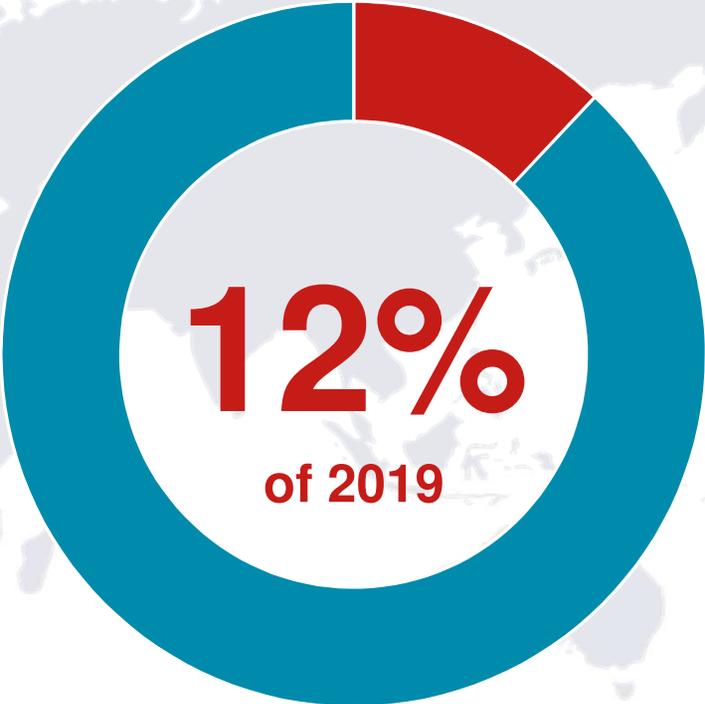
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Domestic markets leading the recovery

August Domestic

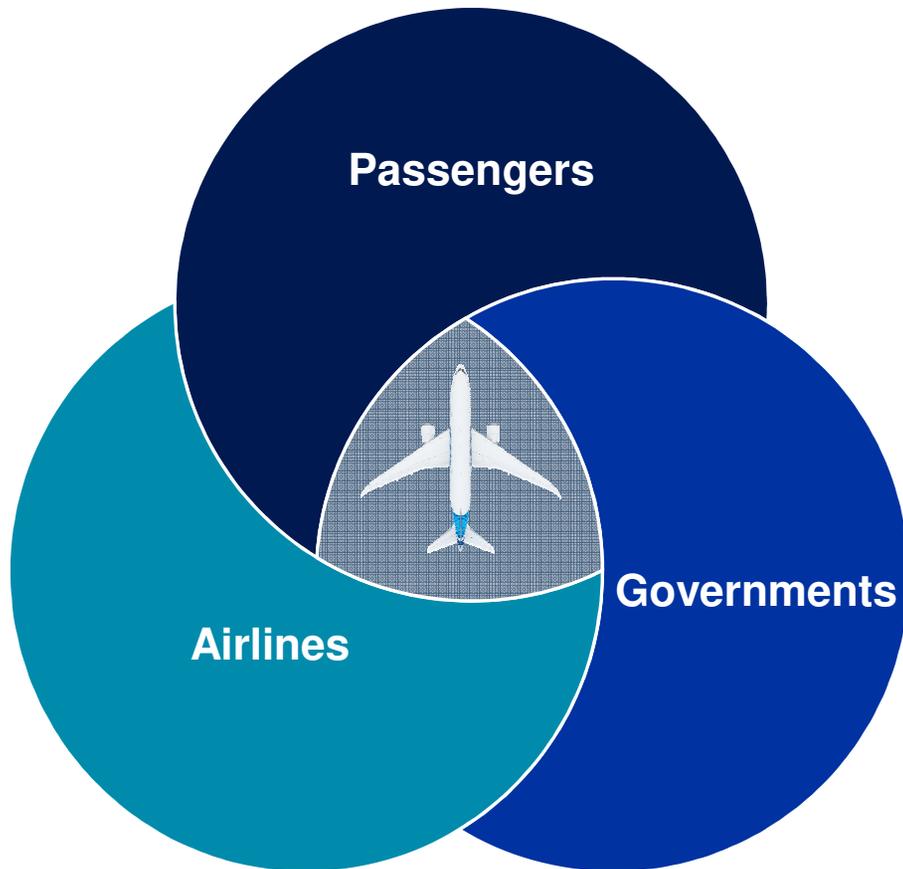


August International



SOURCE: IATA

Near-term market: demand, supply & regulation



Passengers

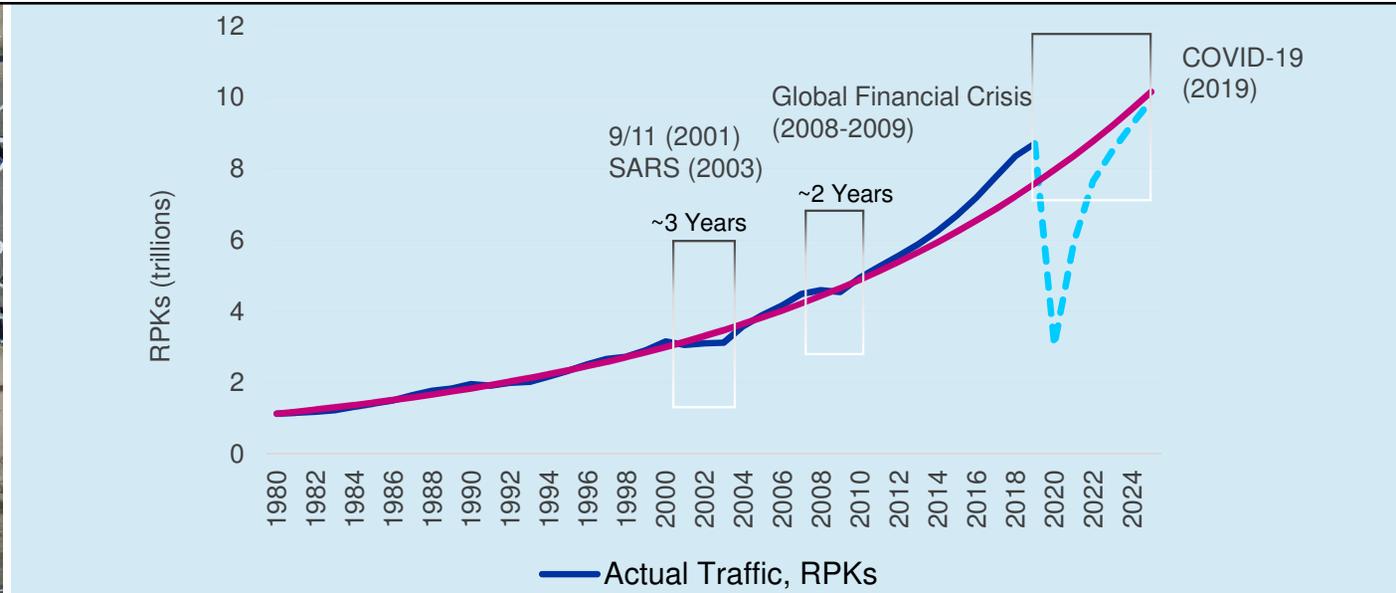
- Health
- Confidence
- Affordability

Governments

- Sustainability
- Travel regulation
- Infrastructure

Airlines

- Fleet decisions
- Workforce
- Capital



Commercial aviation market trends

Replacement

Pent-up retirements
Sustainability
Efficiency

Resilience

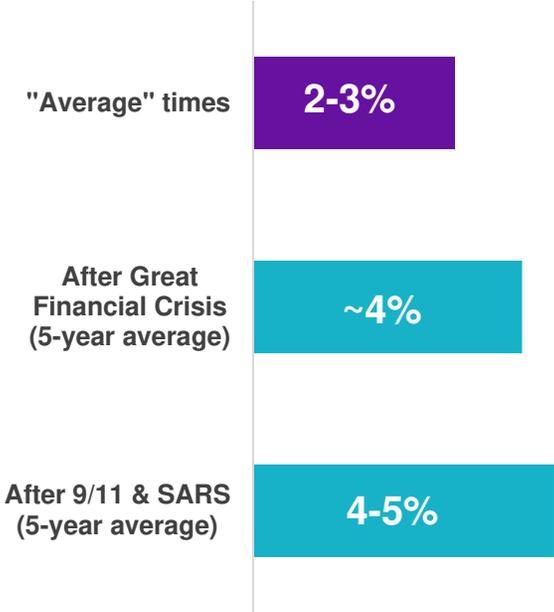
Market diversity
Emerging markets
Innovation

Versatility

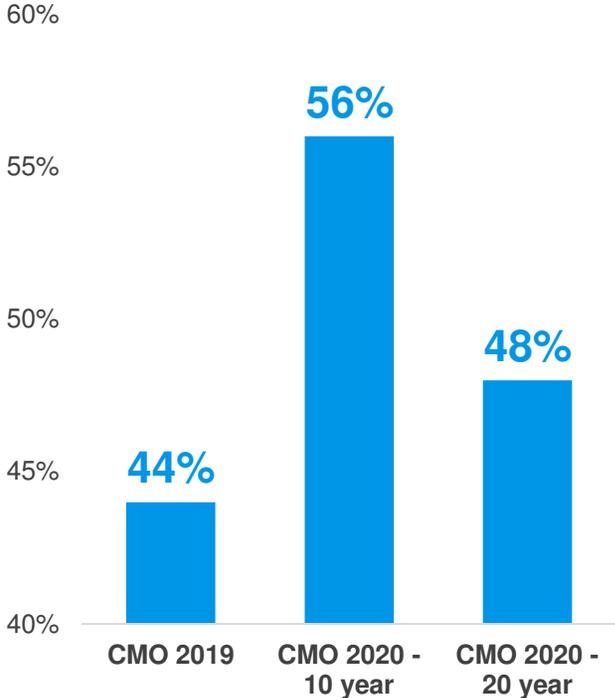
Capability
Network flexibility
Commonality

Shocks accelerate fleet retirements and replacement

Average annual fleet retirement rates



Replacement as share of deliveries



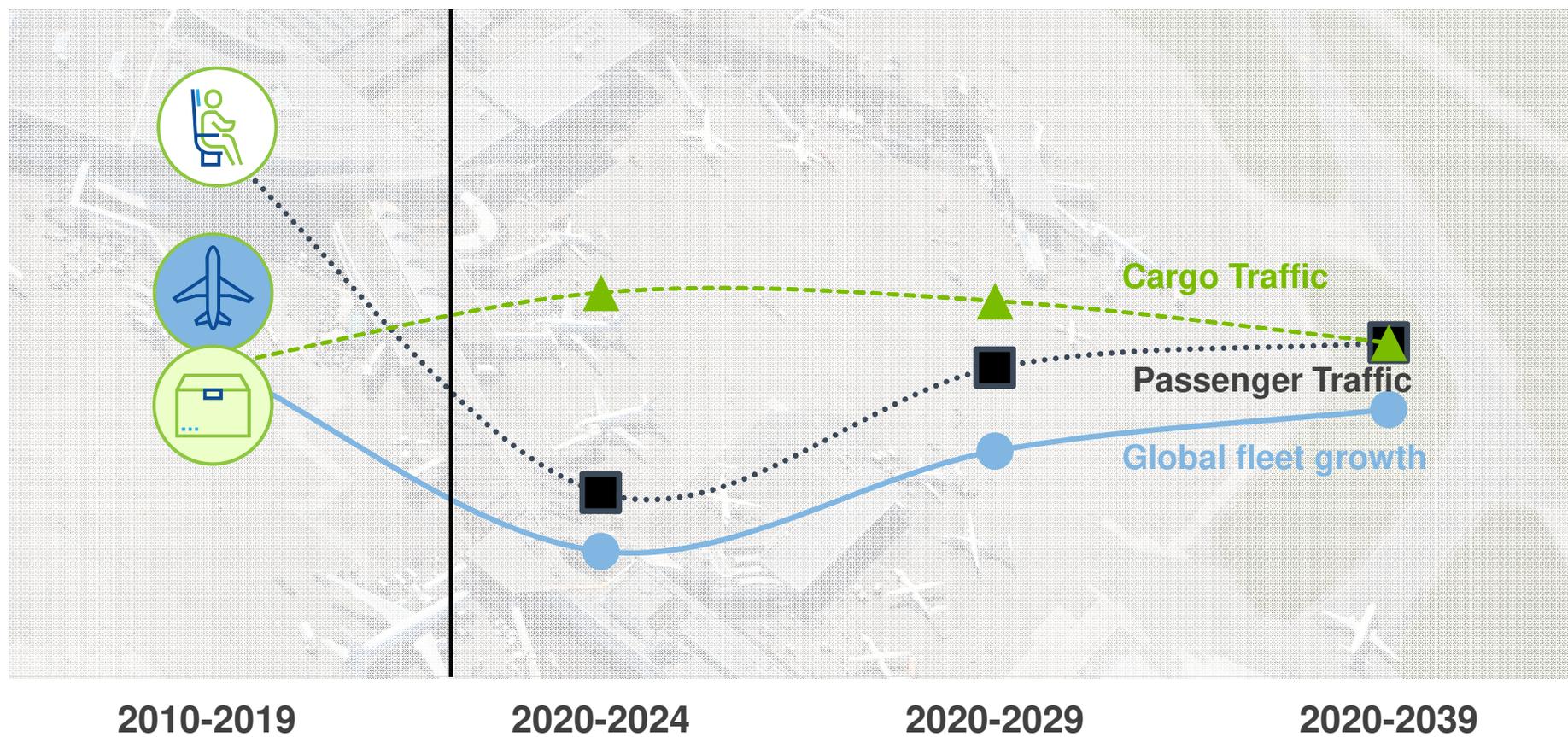
Forecasting in uncertain times: proven perspective

Current Market Outlook

2002

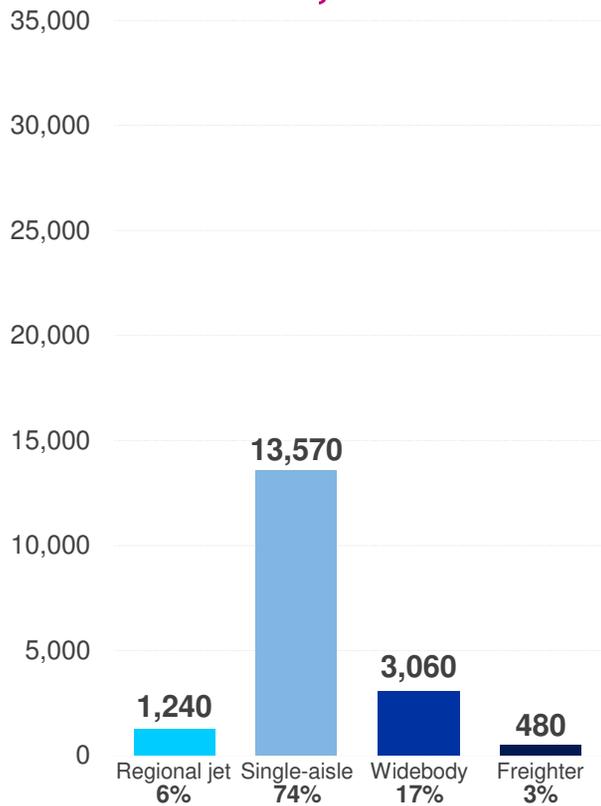


Meaningful impact to first decade outlook, stability in long-term

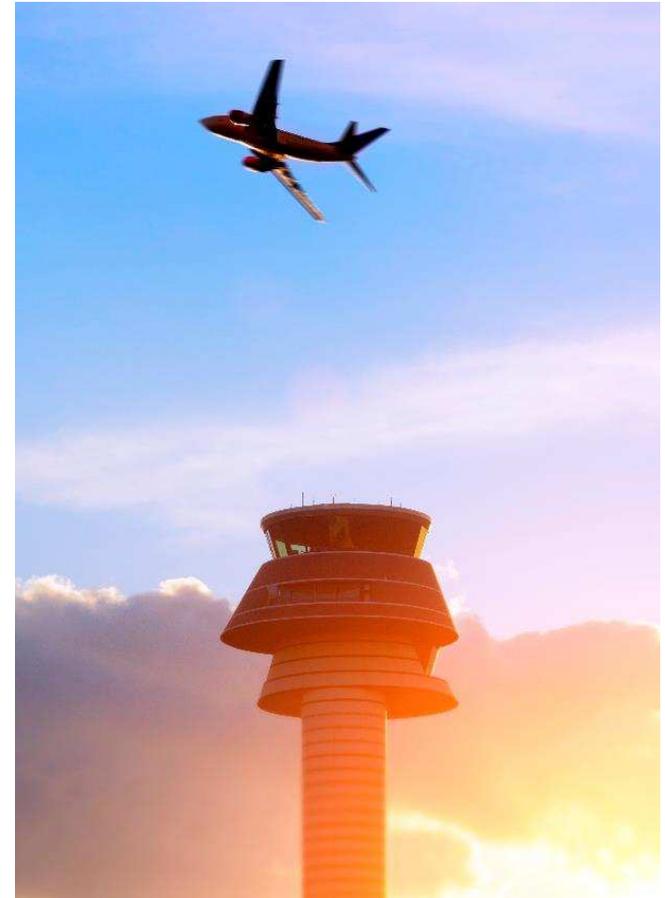
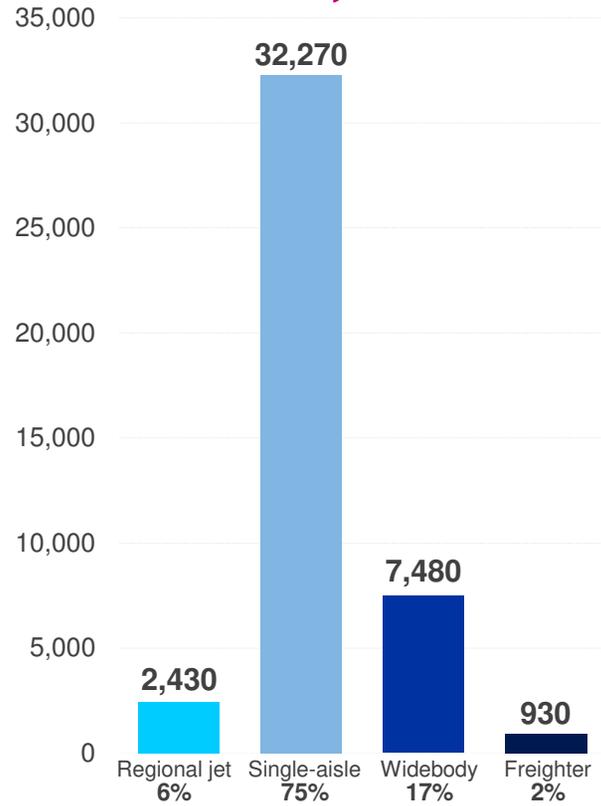


First decade delivery impact, longer-term resilience driven by single-aisle

New airplane deliveries **2020-2029**
18,350

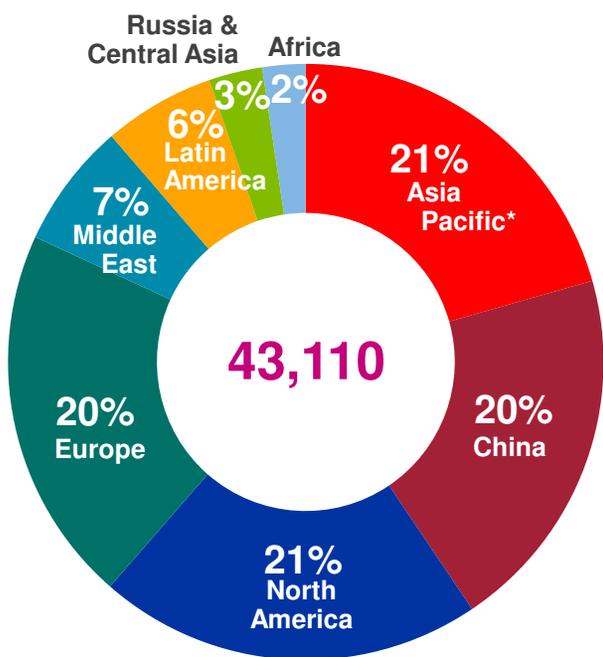


New airplane deliveries **2020-2039**
43,110

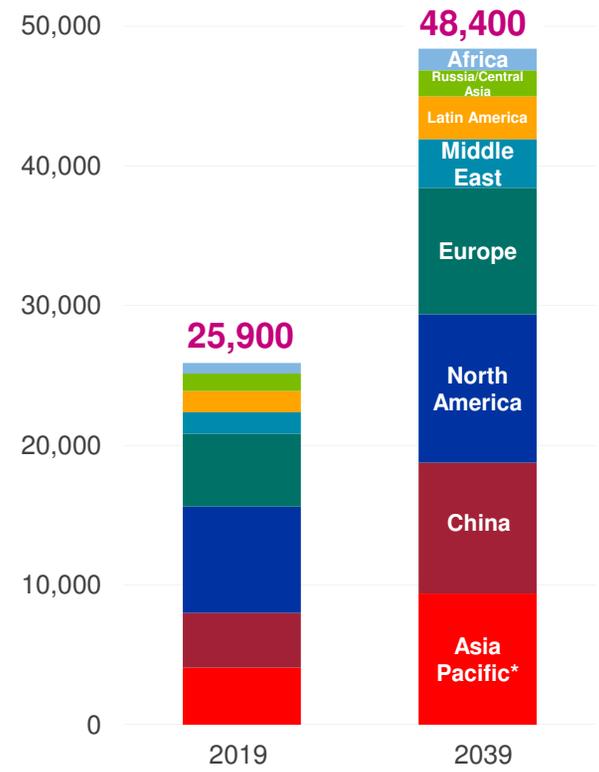


Asian fleet growing from ~30% to nearly 40% of the fleet by 2039

New airplane deliveries **by region**



Fleet **by region**



Forecast period: 2020-2039
*Does not include China



Trade Growth

2.8%



Industrial Production

2.3%



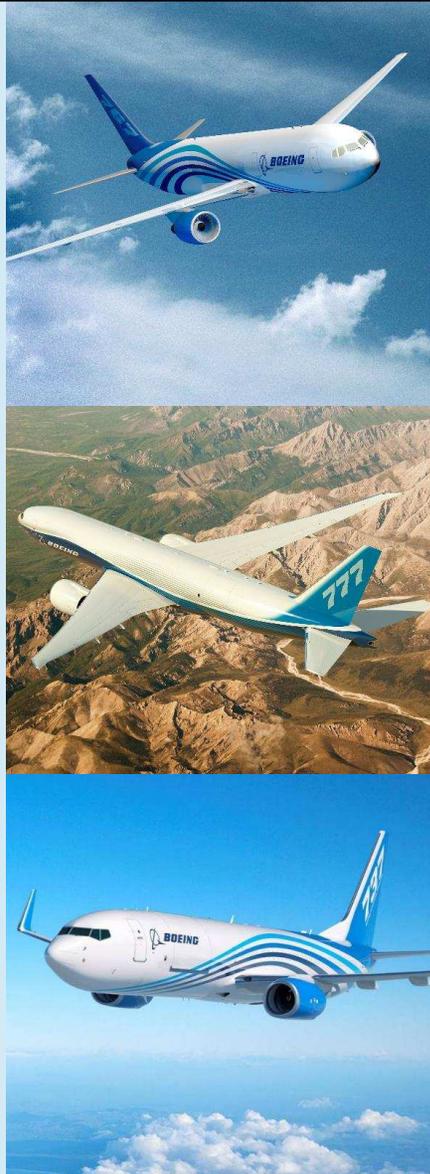
Cargo Traffic (RTK)

4.0%

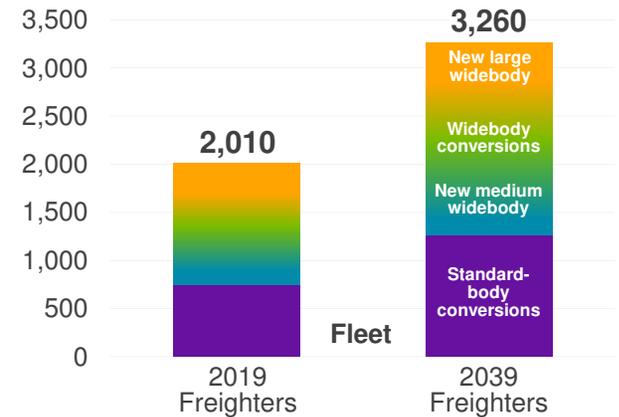


Freighter Fleet Growth (Jets)

2.4%



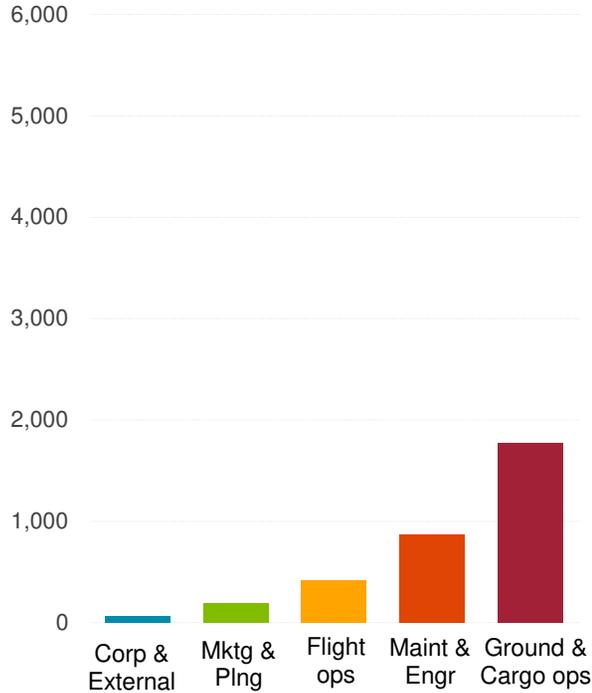
Freighter fleet to grow nearly 60% by 2039



\$9 trillion services market: First decade utilization impact, longer-term transformation

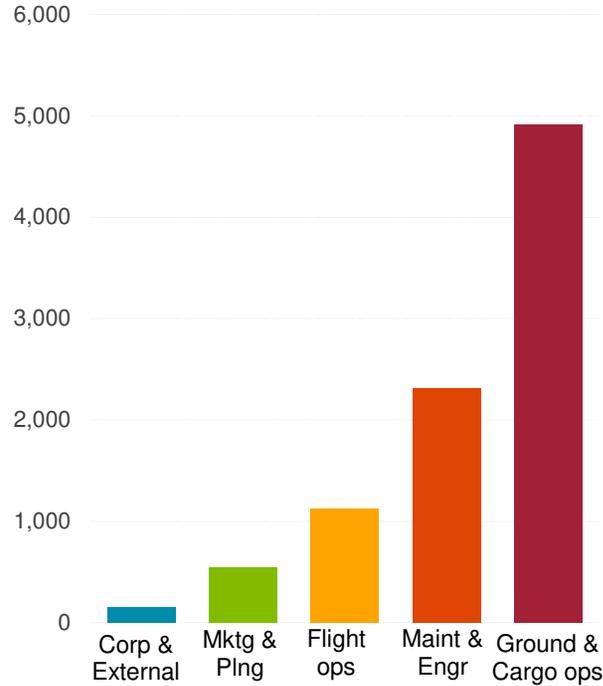
Commercial Aviation Services: **2020-2029**

\$3.3T



Commercial Aviation Services: **2020-2039**

\$9.0T



2020 Commercial Market Outlook Executive Summary

20-Year Market Demand

43,110
Global Deliveries

3.2%
Fleet
Growth

2.5%
GDP
Growth

4.0%
Traffic
Growth

48,400
2039
Fleet

2.1M
New
Personnel

\$9,040B
Services
Market
Value

North America
8,995 Deliveries
2039 Total Fleet: 10,610
Services Market Value: \$1,925B

Europe
8,810 Deliveries
2039 Total Fleet: 9,050
Services Market Value: \$1,840B

Russia and Central Asia
1,250 Deliveries
2039 Total Fleet: 1,870
Services Market Value: \$220B

Latin America
2,610 Deliveries
2039 Total Fleet: 3,060
Services Market Value: \$480B

Africa
1,015 Deliveries
2039 Total Fleet: 1,540
Services Market Value: \$215B

Middle East
2,945 Deliveries
2039 Total Fleet: 3,500
Services Market Value: \$725B

Asia-Pacific
17,485 Deliveries
2039 Total Fleet: 18,770
Services Market Value: \$3,635B

 **2,430 Deliveries**
Regional Jet

 **32,270 Deliveries**
Single Aisle

 **7,480 Deliveries**
Widebody

 **930 Deliveries**
Freighter