Global Market Forecast 2023

Toulouse - 13 June 2023
Air transport brings the world’s population centres together

World’s population by density

- Los Angeles - New York: 5 hours
- Tokyo - Los Angeles: 10 hours
- Paris - Beijing: 10 hours
- Astana - Beijing: 5 hours
- New York - London: 7 hours
- Casablanca - Jeddah: 6 hours
- Bogota - Sao Paulo: 6 hours
- Mauritius - Delhi: 8 hours
- Perth - Sydney: 4 hours

Source: CIESIN, SEDAC, Airbus GMF
Air transport has given us simpler and faster connections

Source: BOAC Timetable 1957, Airbus GMF

1952
6 weeks trip

1957
5 days trip

2025
~20 hours

London

Istanbul

Karachi

Kolkata

Singapore

Darwin

Sydney
Air transport connects more countries than ever, facilitating exchanges

New additional country pairs served by a non stop flight between 1999-2019

New country pairs that have been created between 1999-2019:

- **1,020** new *worldwide* country pairs (+33%)
- **469** *intra-regional* (+30%)
- **551** *inter-continental* (+36%)

Source: OAG (September data), Airbus GMF
Post-Covid capacity has recovered quickly as restrictions were lifted

ASKs compared to 2019 level

North America
- Domestic: 102%
- International: 101%

Europe & CIS
- Domestic: 101%
- International: 90%

Middle East
- Domestic: 100%
- International: 112%

PRC
- Domestic: 126%
- International: 41%

Asia/Pacific (excl. PRC)
- Domestic: 100%
- International: 101%

Africa
- Domestic: 100%
- International: 112%

Latin America
- Domestic: 114%
- International: 92%

World
- Domestic: 108%
- International: 89%

Source: OAG, Airbus GMF

May 2023 (Dom.)

May 2023 (Intl.)
Air transport is a major contributor to GDP and Employment

**World**
- 4.1% GDP
- $3.5 trillion
- 87.7M jobs

**Europe & CIS**
- 4.4% GDP
- 13.5M jobs

**North America**
- 5.0% GDP
- 8.7M jobs

**Latin America**
- 3.5% GDP
- 7.7M jobs

**Middle East**
- 7.6% GDP
- 7.7M jobs

**Africa**
- 3.4M jobs

**Asia/Pacific**
- 3.1% GDP
- 46.7M jobs

Source: ATAG’s Aviation Benefits Beyond Borders, September 2020, Oxford Economics, Airbus GMF

* Employment figures include direct, indirect, induced and tourism catalytic jobs
Air transport is tightly linked to economic development and geography

2019 yearly trips per capita (bubble size proportional to country population)

Source: IHS Markit, Sabre GDD, Airbus GMF
Efficiency improvement has enabled democratisation of air travel

CO₂ emissions per RPK halved through technology and operational improvements

Index base 100 in 1990

- **Air transport share of CO₂ emissions***
- **Fuel burn per RPK** -2.6% per year
- **Fuel consumption** 2.1% per year
- **RPKs** 4.8% per year

Source: IATA, ICAO, Airbus, EDGAR CO₂ emissions, Airbus GMF

* Note: commercial air transport direct share of total anthropogenic CO₂ fossil emissions (excluding land use change)

~90 gCO₂ per passenger kilometre in 2019

4.5 billion passengers carried in 2019

Airbus Global Market Forecast 2023
GMF23 is an exploratory scenario

Source: Airbus GMF
Underlying outlook for GDP, trade and population growth

World GDP: +2.5% CAGR 2019-2042
World trade: +2.9% CAGR 2019-2042
World population: +1.5 bn from 2019 to 2042
Urbanisation: +1.6 bn from 2019 to 2042
Middle Class*: +1.9 bn from 2019 to 2042

* Households with yearly income between $20,000 and $150,000 at PPP in constant 2015 prices

Source: IHS Markit, Airbus GMF
Sensitivities approach to deal with future uncertainties

Sensitivity on key drivers

- GDP forecast
- SAF: penetration, emission reduction factor and prices
- Market-Based Measures: scope and prices
- Fuel efficiency

Traffic growth scenario median at 3.6% CAGR

Number of traffic forecast scenarios

Possible headwinds:
- Environmental regulations, energy availability, geopolitical instability etc...

Possible tailwinds:
- More stable world order, further liberalisation, etc...

Source: Airbus GMF
Modest growth in mature flows...

Top 20 traffic flows (RPK)

- Domestic PRC
- Domestic USA
- Western Europe - USA
- Intra - Western Europe
- Domestic India
- Domestic - Asia Emerging
- Western Europe - Middle East
- Asia Developed - Asia Emerging
- Central Europe - Western Europe
- Indian Subcontinent - Middle East
- Asia Emerging - PRC
- Asia Emerging - Middle East
- PRC - USA
- Asia Developed - USA
- Asia Developed - PRC
- Asia Developed - Western Europe
- Middle East - USA
- Western Europe - South America
- Intra - Asia Developed
- Western Europe - PRC

Source: Airbus GMF

CAGR 2019-2042 (%)

- 2.1% (x1.6)
- 2.3% (x1.7)
- 1.5% (x1.4)

Annual RPK (billions)
...and stronger growth in Asia and Middle East, led by India and PRC
Demand for 40,850 new passenger & freighter aircraft

Number of aircraft

- **46,560** aircraft in total
  - **22,880** aircraft in-service beginning of 2020:
    - 25% will stay in-service (including 2020-22 deliveries)
    - 75% will be replaced
  - **40,850** new deliveries 2023-2042:
    - 58% for growth
    - 42% for replacement

Notes: Passenger aircraft above 100 seats & freighters with a payload above 10t

Source: Airbus GMF
Demand for 40,850 new passenger & freighter aircraft over 2023-2042

Source: Airbus GMF

Note: Demand for passenger aircraft above 100 seats & freighters with a payload above 10t

- Typically Single-Aisle
  - 32,630 aircraft
  - 80% share of total new deliveries

- Typically Widebody
  - 8,220 aircraft (inc. 920 new-built freighters)
  - 20% share of total new deliveries
40,850 new deliveries between 2023 and 2042

Source Airbus GMF
Notes: Passenger aircraft (≥ 100 seats) & Freighters (≥ 10 tons payload) | Figures rounded to nearest 10

Typically Single Aisle
Typically Widebody
Express air cargo growth will outpace General air cargo

World air cargo traffic +3.2% CAGR 2019-2042

- Express cargo: +4.9% CAGR 2019-2042
- General cargo: +2.7% CAGR 2019-2042

Source: IHS Markit, Seabury, IATA, Airbus GMF
World freighter fleet in service will reach 3,230 aircraft by 2042

Number of freighter aircraft

- **Beginning 2020**: 1,990
- **2042**:
  - **Grow**: 1,240
  - **Replace**: 1,270
  - **Stay** (incl. 2020-2022 deliveries): 720
- **New Deliveries (2023-2042)**:
  - **New-build**: 920
  - **Conversions**: 1,590

Source: Airbus GMF
Note: Freighters with a payload above 10t
Global demand for 2,510 freighters, over 2023-2042

- **Single-Aisle (10t - 40t)**: 1,020 aircraft
- **Mid-size Widebody (40t - 80t)**: 890 aircraft
- **Large Widebody (> 80t)**: 600 aircraft

Source: Airbus GMF
Note: Freighters with a payload above 10t
Airlines require the latest, most efficient and lowest-emission aircraft

Fleet modernisation: A strategic hedge against high energy costs

75% of fleet not yet latest generation

Source: Cirium, Airbus GMF

Passenger aircraft above 100 seats – Year end | New generation: A220, A320neo Fam., A330neo, A350, Emb-E2, 737Max, 787

% of in-service fleet by aircraft generation

- Previous generation
- New generation

2017: 5%
2019: 13%
2022: 25%
Airbus product line delivers 20 - 40% fuel burn reduction

**A320 FAMILY**
- Backlog: 5,983 aircraft

**A220**
- Backlog: 520 aircraft

**A350**
- Backlog: 432 aircraft

**A350F**
- Backlog: 39 aircraft

**A330neo**
- Backlog: 187 aircraft

Single-Aisle  |  Freighter  |  Widebody
Airbus is leading aviation decarbonisation
Acting on all levers

Today

- **Fleet renewal / 25% less CO₂**
  - Already 25% CO₂ reduction compared to previous generation aircraft

- **Services portfolio**
  - Expanding upgrades / performance & trajectory
  - Improving aircraft operational efficiency
  - Albatross → FelloFly

- **Up to 50% SAF capability**
  - Moving from 50 to 100% capability by 2030

- **Developing disruptive aerodynamics / airframe / propulsion / energy**
  - eXtra Performance Wing / ZEROe

- **Supporting CORSIA & carbon removals**
  - DACCS scale-up and advocacy

2050+

- **Latest generation aircraft**
- **Operations**
- **Sustainable Aviation Fuel**
- **Disruptive technology**
- **CO₂ Offsetting & Capture**

Source: Airbus GMF
Latest generation aircraft

- Up to 25% lower unit fuel and CO$_2$ vs. previous generation - across the entire Airbus Family

- Only 25%* of passenger in-service fleet are latest generation aircraft

- A350F will be the first latest generation freighter on the market

Operations & Infrastructures

- Increased efficiency of the current fleet, by up to 10%, with a range of solutions
- Upgraded aircraft systems
- Optimized flight trajectories
- Decarbonised on-ground operations
- Air Traffic Management
Sustainable Aviation Fuels

- Flying with 100% SAF reduces lifecycle CO₂ emissions by around 80%
- All Airbus aircraft are already certified to 50%, certification up to 100% by end of decade
- Industrial uptake needed to increase SAF’s availability
- Coalitions and partnerships signed to foster production of SAF
Disruptive technologies

- Development, testing and maturity-based deployment of advanced technologies
- Ambition to bring a hydrogen-powered aircraft to the market by 2035
- Hydrogen as a fuel for turbines, for electric motors via fuel cells and to produce SAF
- Developing advanced solutions for hydrogen or kerosene fuelled aircraft (aerodynamics / airframe / propulsion / hybridization)
Carbon removal options

Nature-based solutions
- Widely used as offsets for compensation in voluntary and regulated markets

Point-Source Carbon Capture
- Emerging technology
- Competes with other industries
- Necessary as a transition solution to develop synthetic fuels at scale

Direct Air Carbon Capture
- Emerging technology
- Enables credits from CO₂ storage and CO₂ as feedstock for synthetic fuels
- Carbon credits from storage can only be used on voluntary markets or local carbon markets
There is no single solution to decarbonise aviation

Airbus supports the ATAG most ambitious technology scenario

> ATAG CO₂ Roadmap based on most ambitious technology scenario & central traffic growth scenario (3.1% CAGR 2018-2050)
Takeaways

Passenger Traffic
2019-2042 CAGR
3.6%

Freight Traffic
2019-2042 CAGR
3.2%

Fleet in service
beginning of 2020
22,880 aircraft

Fleet in service in 2042
46,560 aircraft

New deliveries 2023-2042
40,850 aircraft