Global Market Forecast 2022

Stan Shparberg and Bob Lange
People want and need to travel

- Linking families and friends
- Enabling tourism
- Ensuring connectivity
- Supporting economies
- Reconnecting cultures and societies
Air traffic is recovering continuously with a few, notable exceptions
Air traffic recovery to 2019 levels between 2023 and 2025

Recovery trend confirmed despite recent events (Omicron wave, war)

Lower boundary of recovery ‘corridor’ includes risk of further waves

Source: Sabre, OAG, FR24, IATA, Airbus GMF
Airlines require the latest, most efficient and lowest-emission aircraft

% of in-service fleet by aircraft generation

- Previous generation
- New generation

- 5% in 2017
- 13% in 2019
- 20% in 2021

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Fleet modernisation:
A strategic hedge against high energy costs

80% of fleet not yet latest generation

Western built passenger aircraft above 100 seats – pax aircraft only - Year end / New generation: A220, A320neo Fam., A330neo, A350, 737Max, 777X, 787
Previous generation: A300, A310, DC 9, DC10, 707, 727, 737, 747, 757, 767, 777, MD11, MD80, MD90, F100, A320 Fam., A330, A340
Airbus product line delivers 20 - 40% fuel burn reduction

**A320 FAMILY**
- Backlog: 5,829 aircraft

**A220**
- Backlog: 544 aircraft

**A350**
- Backlog: 423 aircraft

**A350F**
- Backlog: 31 aircraft

**A330neo**
- Backlog: 196 aircraft

*Single-Aisle  Freighter  Widebody*
~39,500 new passenger & freighter aircraft deliveries over 2022-2041

Source: IHS Markit, Airbus GMF
Note: Passenger aircraft above 100 seats & freighters with a payload above 10t

<table>
<thead>
<tr>
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<th>2019-2041 CAGR</th>
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<tbody>
<tr>
<td>Gross Domestic Product</td>
<td>2.6%</td>
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<tr>
<td>Passenger Traffic</td>
<td>3.6%</td>
</tr>
<tr>
<td>Freight Traffic</td>
<td>3.2%</td>
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Beginning 2020 fleet in service (Pre-Covid) | 22,880

2041 fleet in service                     | 46,930
Fundamental drivers unchanged, but some becoming more relevant
Short-term pressures apparent but likely to normalise within a few years

Source: IHS Markit, Airbus GMF
GMF 2022 is an exploratory scenario

From the current state of knowledge

GMF 2022

EXPLORATORY (forecast)

Now

NORMATIVE (backcast)

2050

From the defined target

Sustainable Development Scenario - SDS
Net Zero Emission - NZE
Share of energy cost in airline operating costs is growing

Unit cost ($ cents per RPK - 2019)

Share fuel cost (%)
SAF & CO$_2$ prices impact energy cost assumptions in GMF 2022

Blended Jet Fuel price incl. CO$_2$ prices ($ per barrel - 2019)

100% fossil fuel for all regions at very comparable prices

Source: IHS, IEA/WEO 2021, Airbus GMF
GDP projection has been reviewed upward since GMF 2021
Despite war in Ukraine generating downward pressure

Source: IHS Markit, Airbus GMF
World international trade is expected to double in the next 20 years

Source: IHS Markit, Airbus GMF

Strong demand for air cargo supported by world trade growth

World international trade ($ trillion - 2015)
Express air cargo growth will outpace General air cargo

World air cargo traffic +3.2% CAGR 2019-2041

- **Express** 25%
  - 215 billion FTK (2019)
  - 430 billion FTK (2041)
- **General** 75%
  - 215 billion FTK (2019)
  - 430 billion FTK (2041)

Express boosted by e-commerce
2019-2041 CAGR +4.9%

General cargo dominates the market
2019-2041 CAGR +2.7%

Source: IHS Markit, Seabury, IATA, Airbus GMF

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World freighter fleet in service will reach 3,070 aircraft by 2041

Number of aircraft

- 2,030 aircraft in-service beginning of 2020:
  - 31% will stay in-service (including 2020 & 2021 deliveries)
  - 69% will be replaced

- Demand for 2,440 new-build or converted freighters over 2022-2041

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Global demand for ~2,440 freighters, over 2022-2041

<table>
<thead>
<tr>
<th>Category</th>
<th>Type</th>
<th>Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Aisle</td>
<td>(10t - 40t)</td>
<td>990</td>
</tr>
<tr>
<td>Mid-size Widebody</td>
<td>(40t - 80t)</td>
<td>890</td>
</tr>
<tr>
<td>Large Widebody</td>
<td>(&gt; 80t)</td>
<td>560</td>
</tr>
</tbody>
</table>
Passenger traffic expected to grow at 3.6% from 2019 to 2041

World annual traffic (RPK trillion)

Source: ICAO, Airbus GMF
Mature flows will grow by approx. 2-3% per year

Top 20 traffic flows (RPK)
- Domestic PRC
- Domestic USA
- Western Europe - USA
- Intra - Western Europe
- Western Europe - Middle East
- Domestic - India
- Domestic - Asia Emerging
- Asia Developed - Asia Emerging
- Central Europe - Western Europe
- Indian Sub-continent - Middle East
- Asia Emerging – PRC
- Asia Emerging - Middle East
- Asia Developed - USA
- PRC - USA
- Asia Developed - Western Europe
- Asia Developed – PRC
- Middle East – USA
- Western Europe - South America
- Western Europe - PRC
- Intra - Asia Developed

CAGR 2019-2041 (%)
- 2.2%
- 2.4%
- 1.6%

Annual RPK (billions)
Strong growth from Asia, domestic PRC to become the largest flow

Top 20 traffic flows (RPK)

- Domestic PRC
- Domestic USA
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- Western Europe - Middle East
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- Asia Emerging – PRC
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- Asia Developed - USA
- PRC - USA
- Asia Developed - Western Europe
- Asia Developed – PRC
- Middle East – USA
- Western Europe - South America
- Western Europe - PRC
- Intra - Asia Developed

CAGR 2019-2041 (%)

Source: Airbus GMF
Demand for ~39,500 new passenger & freighter aircraft

22,880 aircraft in-service beginning of 2020:
- 33% will stay in-service (including 2020 & 2021 deliveries)
- 67% will be replaced

39,490 new deliveries 2022-2041:
- 60% for growth
- 40% for replacement

Notes: Passenger aircraft above 100 seats & freighters with a payload above 10t
Aircraft are utilised flexibly across the full scope of airline operations

Source: OAG, Airbus GMF

2019 operations

Number of aircraft (Shade of blue proportional to number of aircraft)

Source: OAG, Airbus GMF
Global demand for ~39,500 new passenger & freighter aircraft

Typically Single-Aisle

31,620 aircraft

80% share of total new del.

Typically Widebody

7,870 aircraft

20% share of total new del.

Source: Airbus GMF
Note: Demand for passenger aircraft above 100 seats & freighters with a payload above 10t
~39,500 new deliveries between 2022 and 2041
80% typically Single Aisle - 20% typically Widebody

Source: Airbus GMF
Notes: Passenger aircraft above 100 seats & freighters with a payload above 10t
By 2041, new generation passenger aircraft will represent >95% of the fleet

Number of passenger aircraft in service*

* Western built passenger aircraft above 100 seats – pax aircraft only / **1st generation: A300, DC 9, DC10, 707, 727, 737, 747 / 2nd generation: A310, MD11, MD80, MD90, 737, 747, 757, 767, F100 / Previous generation: A320 Fam., A330, A340, 717, 737NG, 747, 777 / New generation: A220, A320neo Fam., A330neo, A350, A380, 737Max, 777X, 787 & new programs

Source: Cirium, Airbus GMF

New generation** aircraft
(e.g. A320neo; A350...)

1st** (e.g. 727) + 2nd** (e.g. MD80) + previous generation** (e.g. A320ceo) aircraft
Global Market Forecast 2022-2041

- Air traffic demand is coming back strongly as the world adapts to Covid. Traffic will recover to 2019 levels between 2023 and 2025

- GMF 2022 integrates effects of rising energy costs and stated policies

- Passenger traffic growth 3.6% CAGR
  Freight traffic growth 3.2% CAGR

- ~39,500 new aircraft deliveries will be needed, of which >2,400 new and converted freighters

- ~80% will typically be Single-Aisle aircraft and ~20% will be Widebodies

- Only 20% of today’s fleet are latest generation