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# 2024 Fleet & MRO Forecast Asia Pacific Focus | AWIN Market Analysis Preliminary

Intelligence & Data Services | Aviation Week Network

Brian Kough, Sr. Director, Forecasts & Aerospace Insights

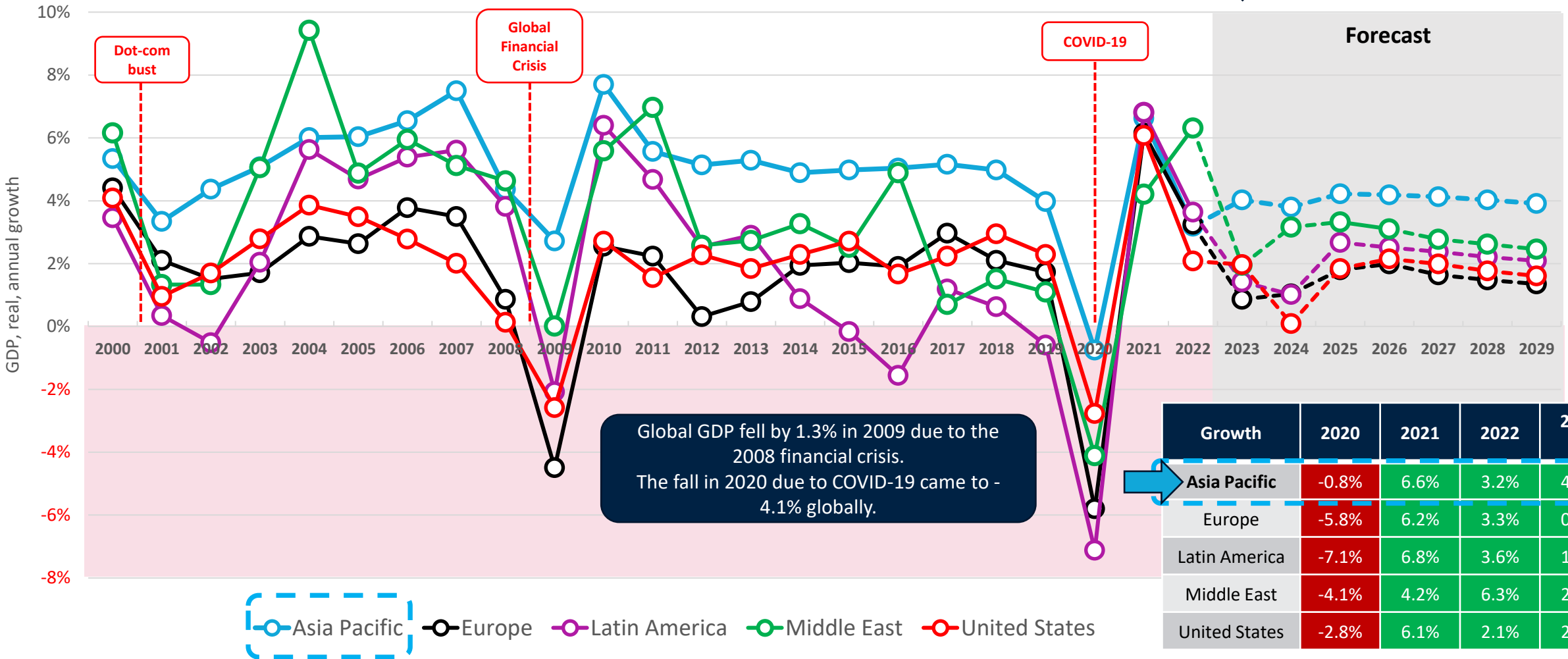
September 2023



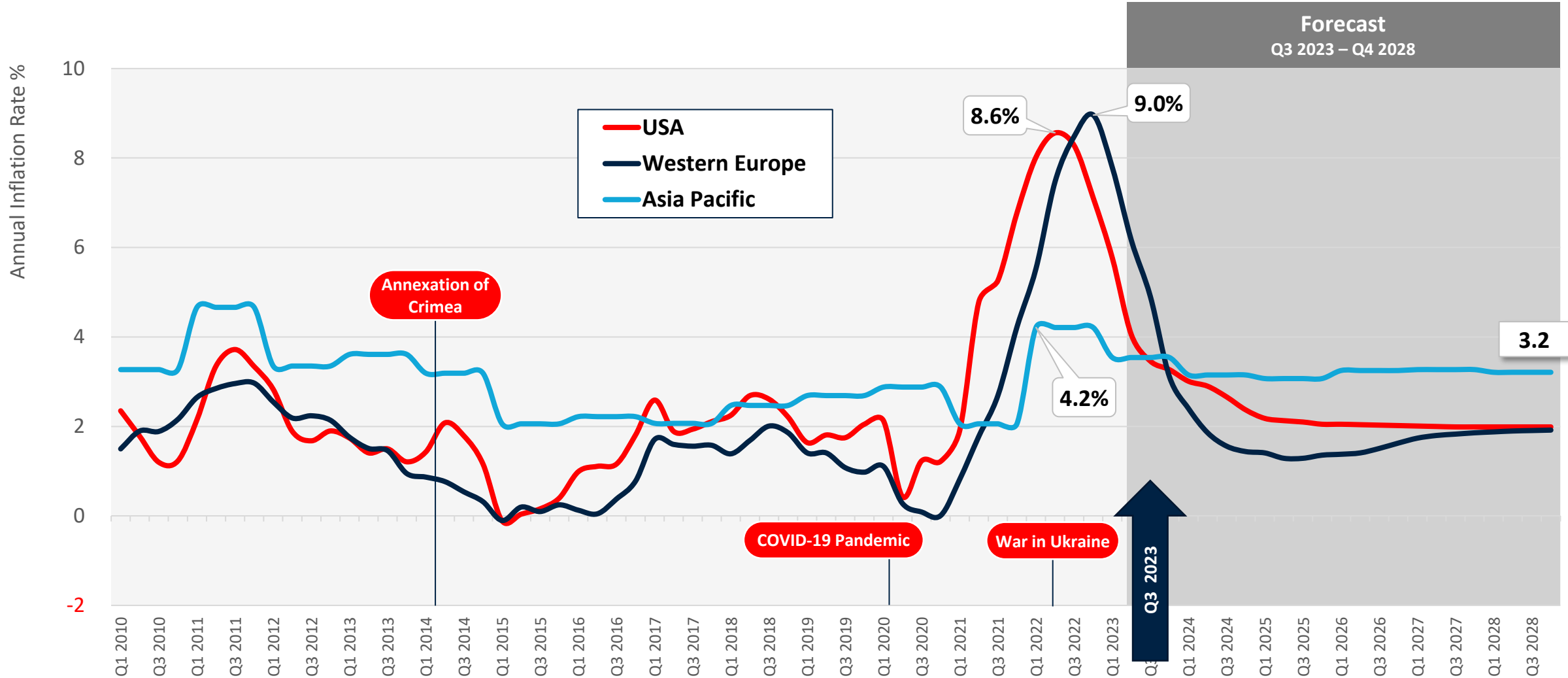
# Market Trends, Drivers & KPIs



# GDP & Recent Economic Shocks

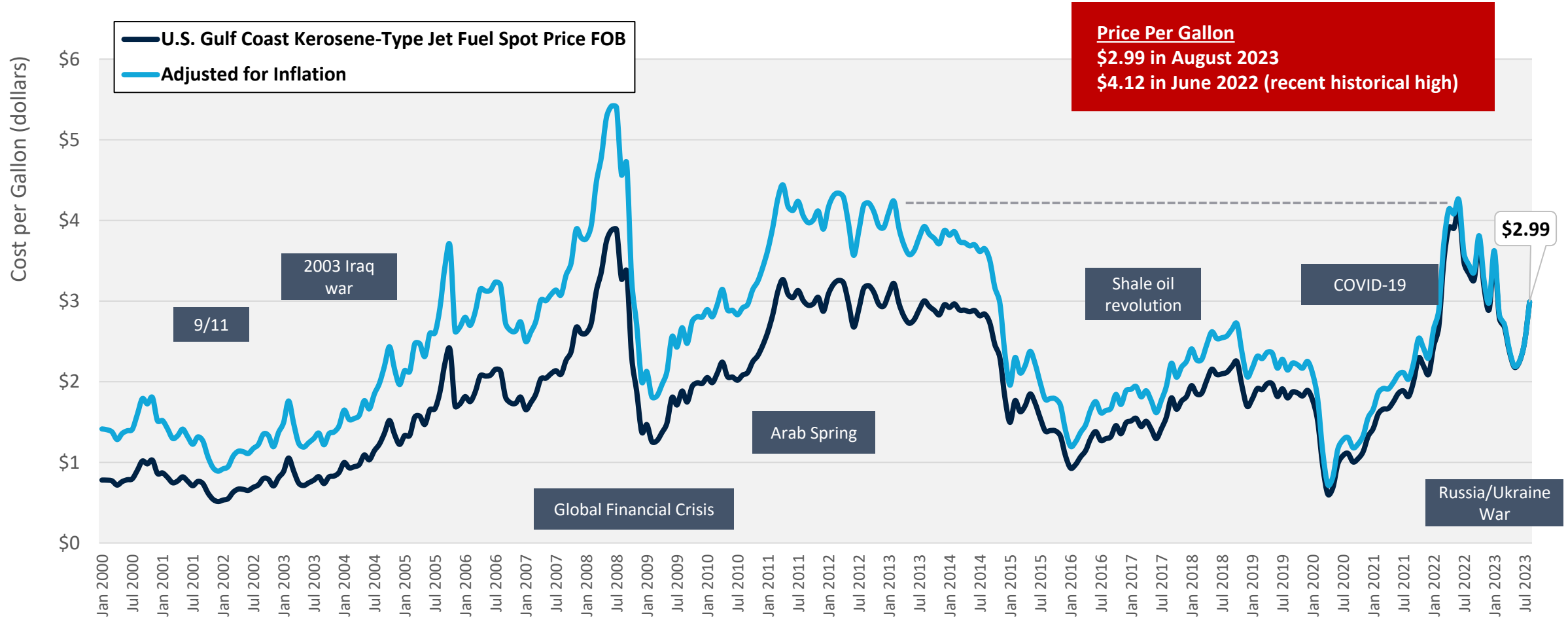


# Inflation, Consumer Price Index, % year-on-year



# Jet Fuel Price and Inflation Adjusted

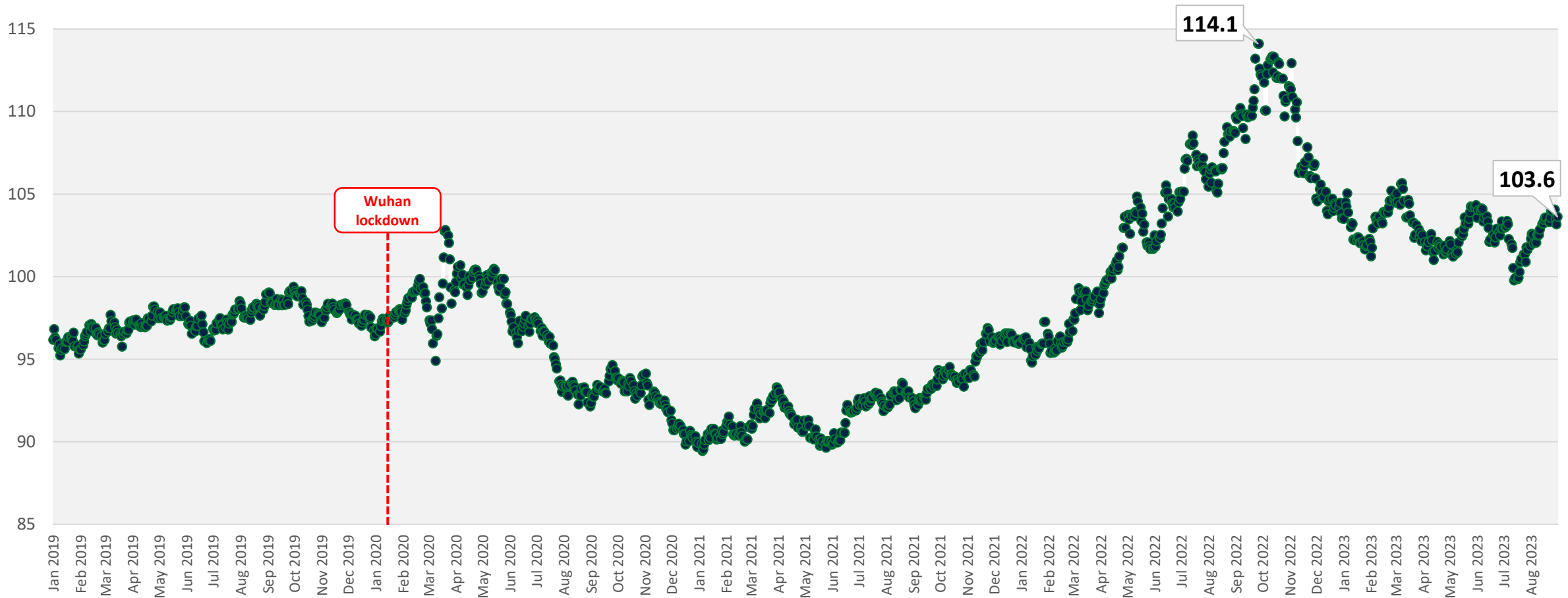
U.S. CPI-adjusted in latest month's price



Source: US EIA, U.S. Gulf Coast Kerosene-Type Jet Fuel Spot Price FOB and U.S. Bureau of Labor Statistics CPI Index.  
 Note: Prices adjusted for inflation. Today's dollar value – all monthly prices are monthly averages adjusted for inflation using U.S. CPI data.











# U.S. Dollar Index (DXY)

USD vs. 16 other national currencies



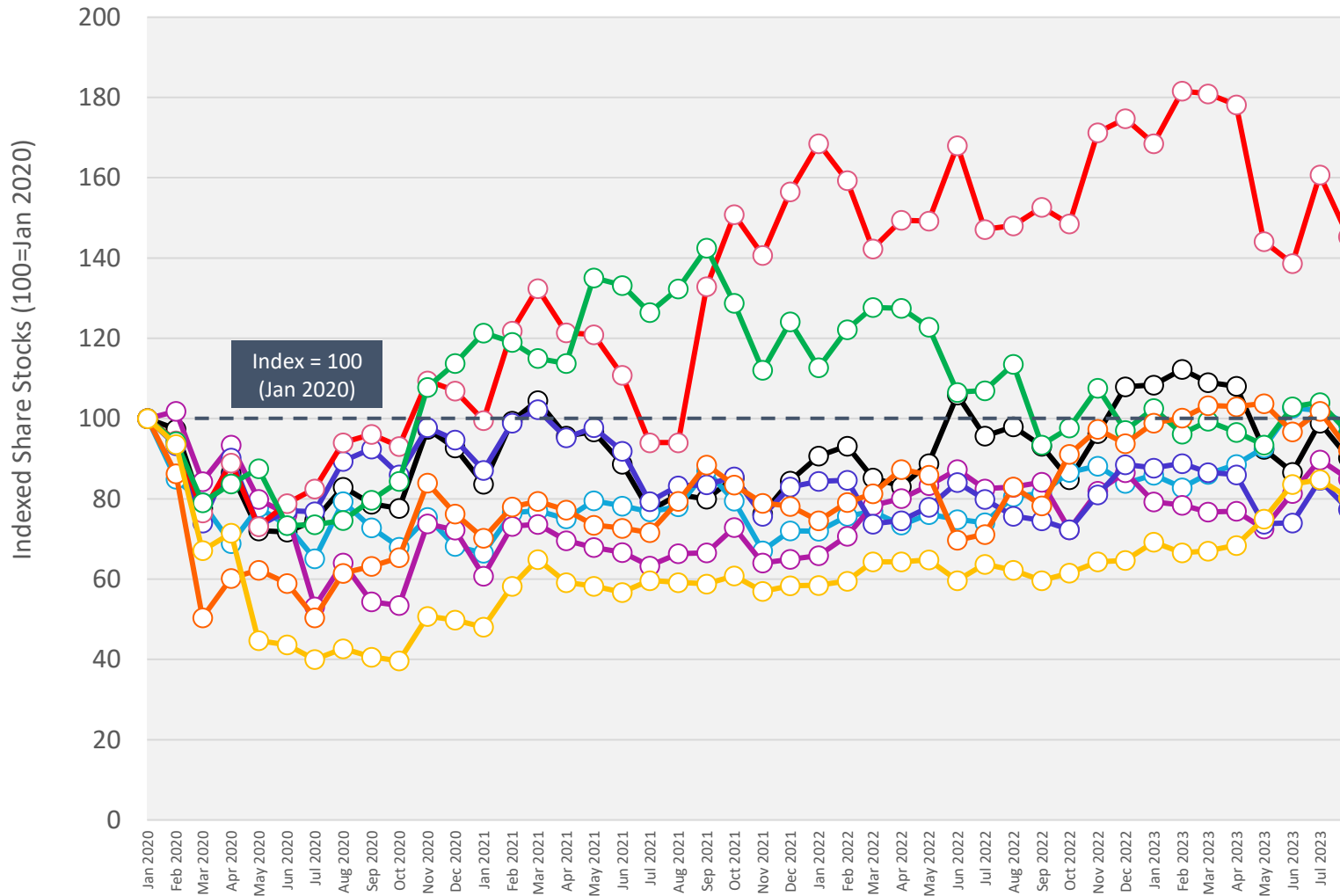
Source: WSJ U.S. Dollar Index (DXY).  
Note: Index measures U.S. currency against a basket of 16 other currencies.

# Top 10 Asian Airline Groups by Traffic, 2022 v. 2021 – Uneven Recovery

Rank 2022	Airline/Group	Country	RPK (m)			ASK (m)			Load Factor		Passengers (thousands)		
			2022	2021	Change	2022	2021	Change	2022	2021	2022	2021	Change
1	 中国南方航空 CHINA SOUTHERN	China	102,078	152,426	-33%	153,848	213,926	-28%	66%	71%	62,636	98,505	-36%
2	 SINGAPORE AIRLINES	Singapore	91,747	11,756	+680%	118,893	56,273	+111%	77%	21%	20,735	2,163	+859%
3	 IndiGo	India	80,737	43,522	+86%	100,013	60,919	+64%	81%	71%	75,313	45,941	+64%
4	 中國東方航空 CHINA EASTERN	China	61,272	108,787	-44%	96,180	160,800	-40%	64%	68%	42,528	79,055	-46%
5	 AIR CHINA	China	60,354	104,627	-42%	96,196	152,452	-37%	63%	69%	38,607	69,048	-44%
6	 AIR INDIA	India	45,029	29,625	+52%	56,150	44,585	+26%	80%	66%	17,917	13,093	+37%
7	 ANA	Japan	44,107	14,021	+215%	72,070	35,899	+101%	61%	39%	29,188	11,685	+150%
8	 JAPAN AIRLINES	Japan	41,382	13,001	+218%	65,901	34,717	+90%	63%	37%	29,838	12,582	+137%
9	 QANTAS	Australia	34,363	18,557	+85%	50,633	29,374	+72%	68%	63%	21,257	15,866	+34%
10	 海南航空 HAINAN AIRLINES	China	33,515	62,616	-46%	49,520	83,839	-41%	68%	75%	21,074	41,299	-49%

Source: AWIN and annual reports. Note: Results for Qantas are for year ending 21 June 21.

# Indexed Stock Price Change – Leading Airlines in Asia



## Year-on-Year Change

		31-Aug-23	31-Aug-22	Change
	<b>Air China</b>	5.81	6.31	<b>-7.9%</b>
	<b>ANA</b>	3,290.00	2,687.50	<b>22.4%</b>
	<b>Cathay Pacific</b>	8.36	8.16	<b>2.5%</b>
	<b>China Eastern Airlines</b>	2.77	2.71	<b>2.2%</b>
	<b>China Southern Airlines</b>	6.32	6.44	<b>-1.9%</b>
	<b>Korean Air Lines</b>	22,800.00	26,850.00	<b>-15.1%</b>
	<b>Qantas Airways</b>	5.91	5.32	<b>11.1%</b>
	<b>Singapore Airlines</b>	6.87	5.32	<b>29.1%</b>

Note: Figures in local currency.

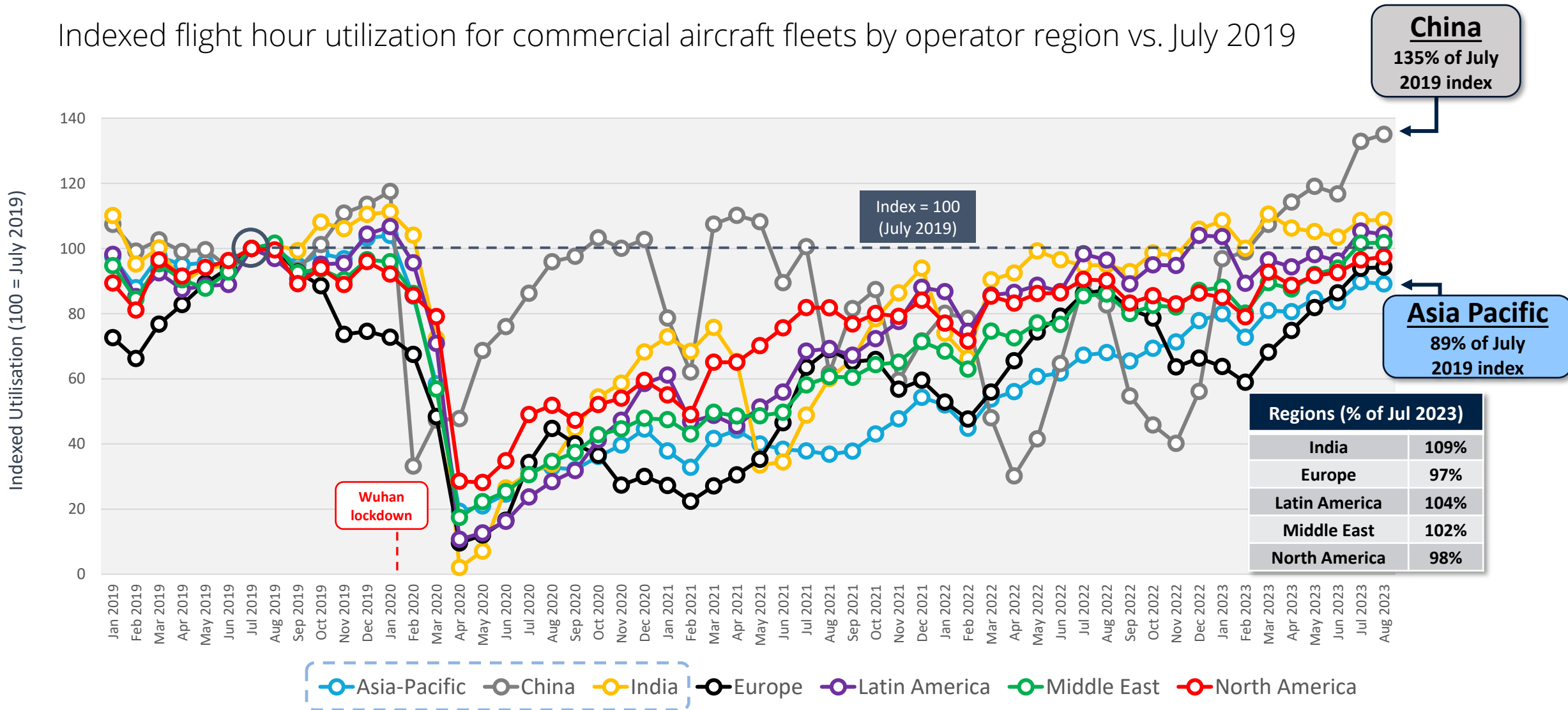


Credit: Nigel Howarth, Aviation Week Network



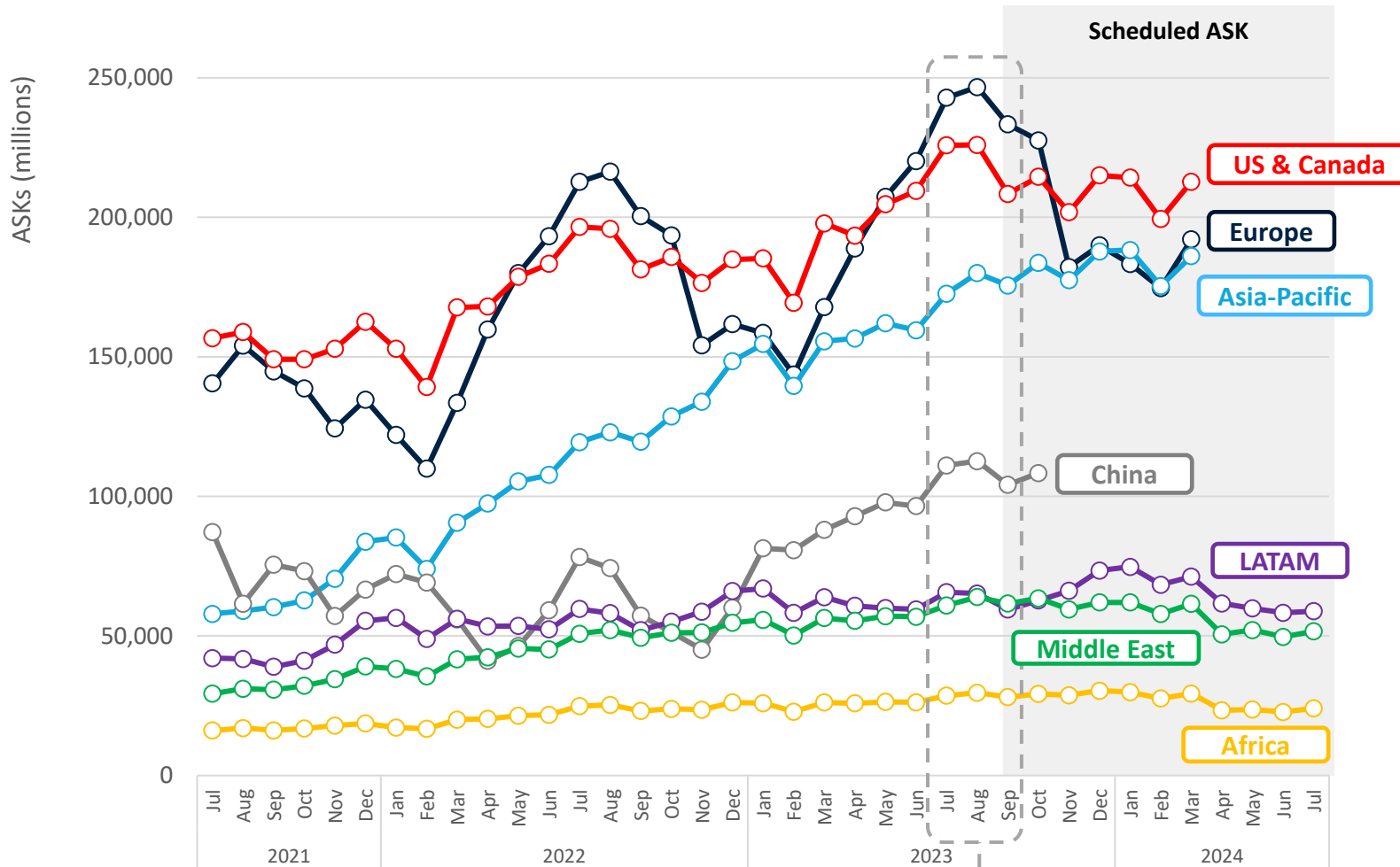
# Utilization Change – Region

Indexed flight hour utilization for commercial aircraft fleets by operator region vs. July 2019



# Scheduled & Historic Available Seat Kilometres – By Region

Scheduled airline capacity (updated 8 Sept 2023)

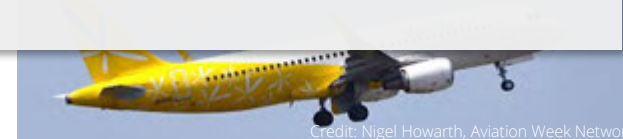


Region	Q3 2023 vs. 2022 % Change	H1 2023 vs. 2022 % Change
Europe	+15%	+21%
U.S. & Canada	+15%	+17%
Asia-Pacific	+46%	+66%
China	+56%	+56%
LATAM & Caribbean	+12%	+15%
Middle East	+22%	+34%
Africa	+18%	+31%

# Preliminary Forecast 2024-2033



# Forecast: New Aircraft Deliveries by Region (2024-33)

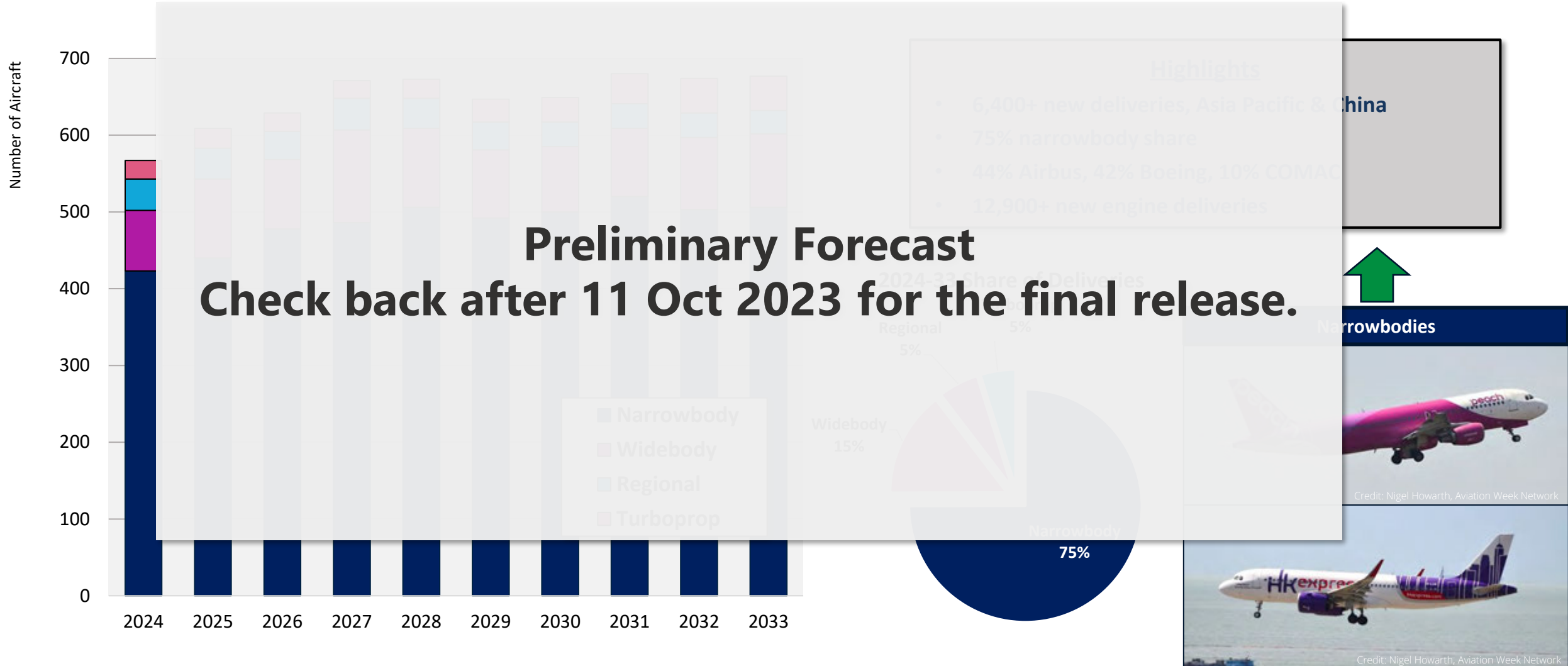


aircraft delivered by Chinese operators between 2024 - 2033

operators based in Asia Pacific between 2024 and 2033

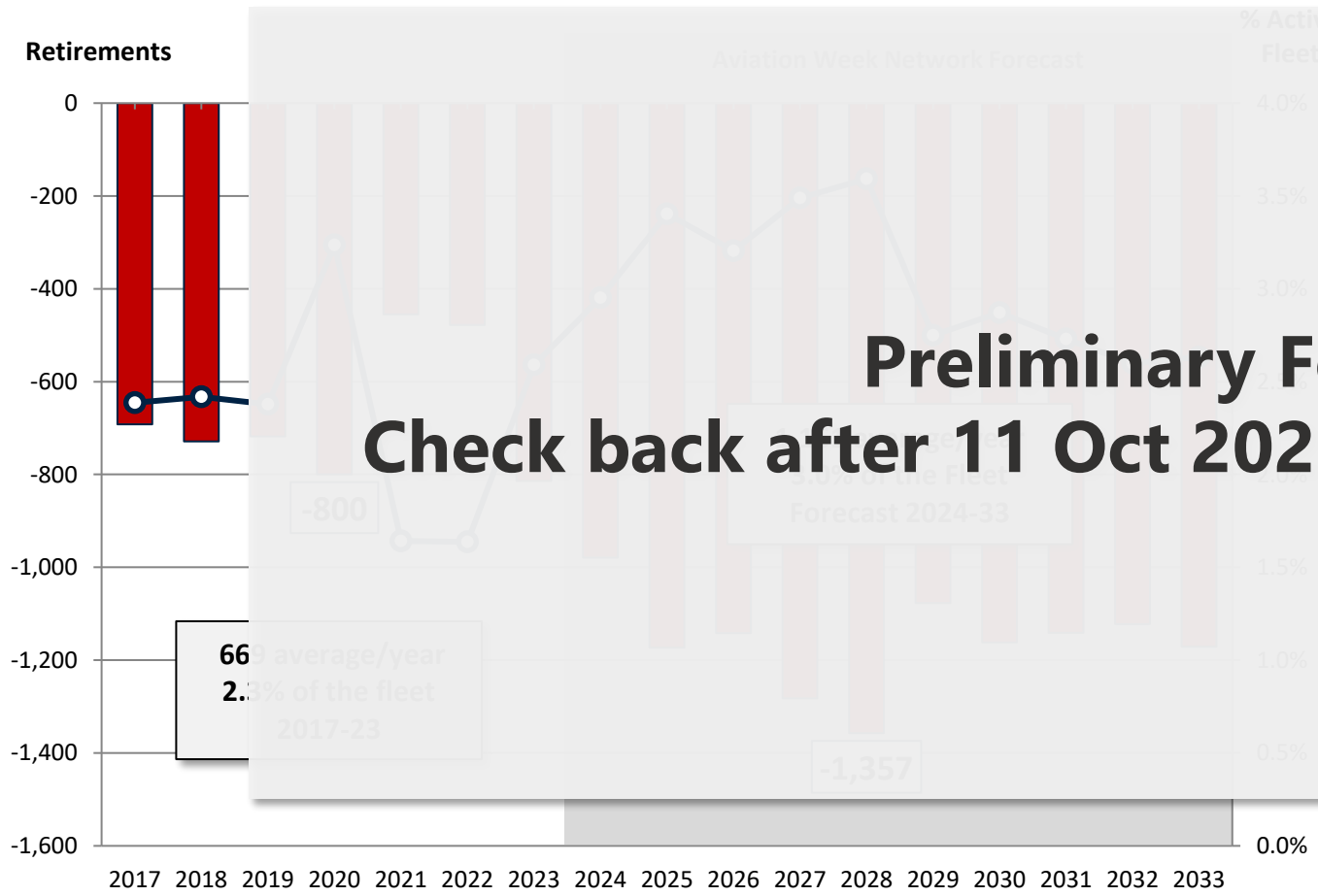
# Forecast: Trends in Commercial Deliveries (APAC & China)

Preliminary forecasted annual new build deliveries



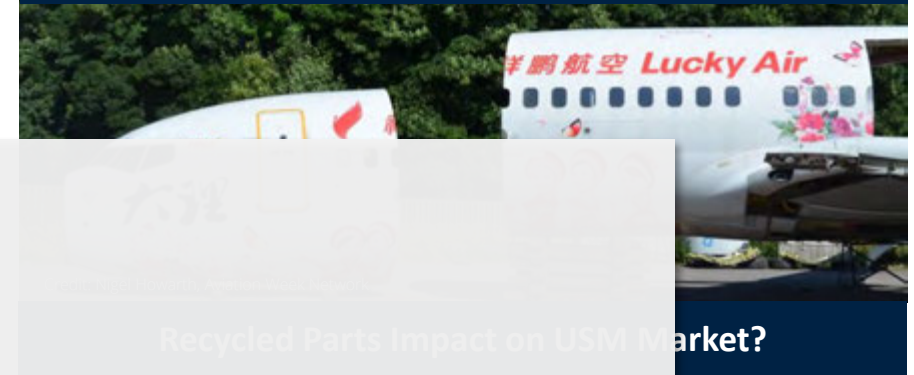
# Forecast: Trends in Aircraft Retirements

Annual retirements historical & forecasted, % of in-service fleet



**Preliminary Forecast**  
 Check back after 11 Oct 2023 for the final release.

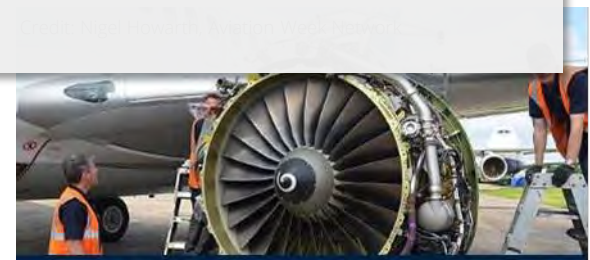
~11,600 retirements over 2024-2033



Recycled Parts Impact on USM Market?



~2,300  
 Including ~560 destined to P2F conversions.



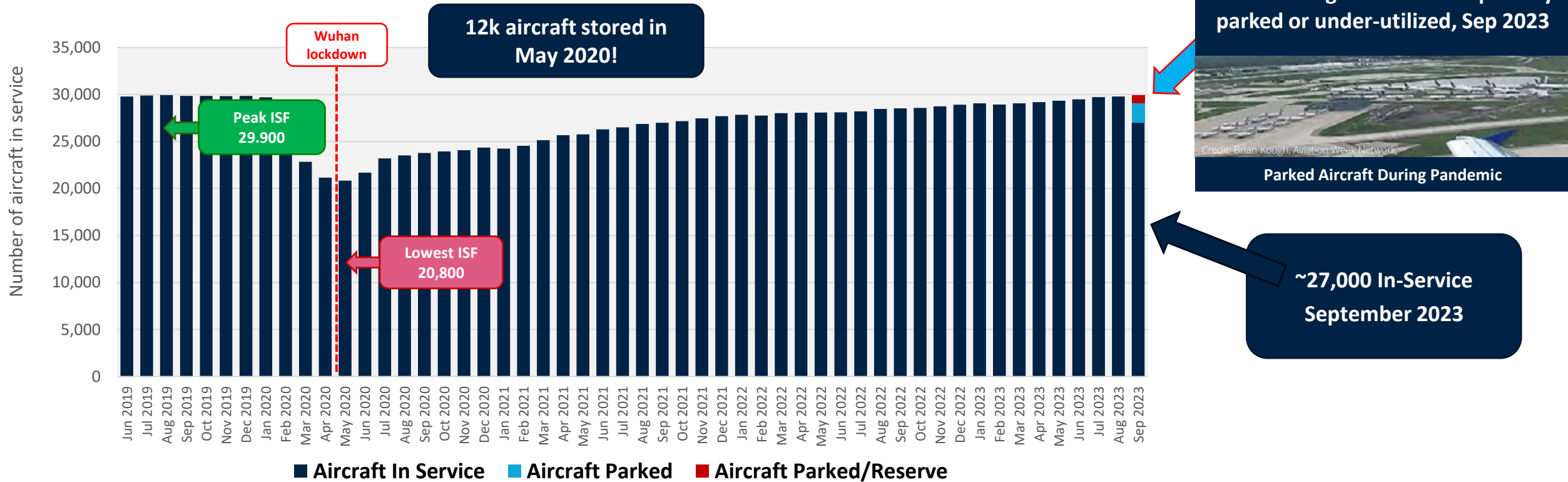
CFM56 being removed from 737-700

Source: 2024 Commercial Aviation Fleet & MRO Forecast, Fleet Discovery, Aviation Week Network, Copyright 2023.  
 Note: Number of aircraft "retired" includes "fleet removals" for passenger-to-freighter (PTF) conversions.



# Global Historic Trends: Storage & In-Service Fleet

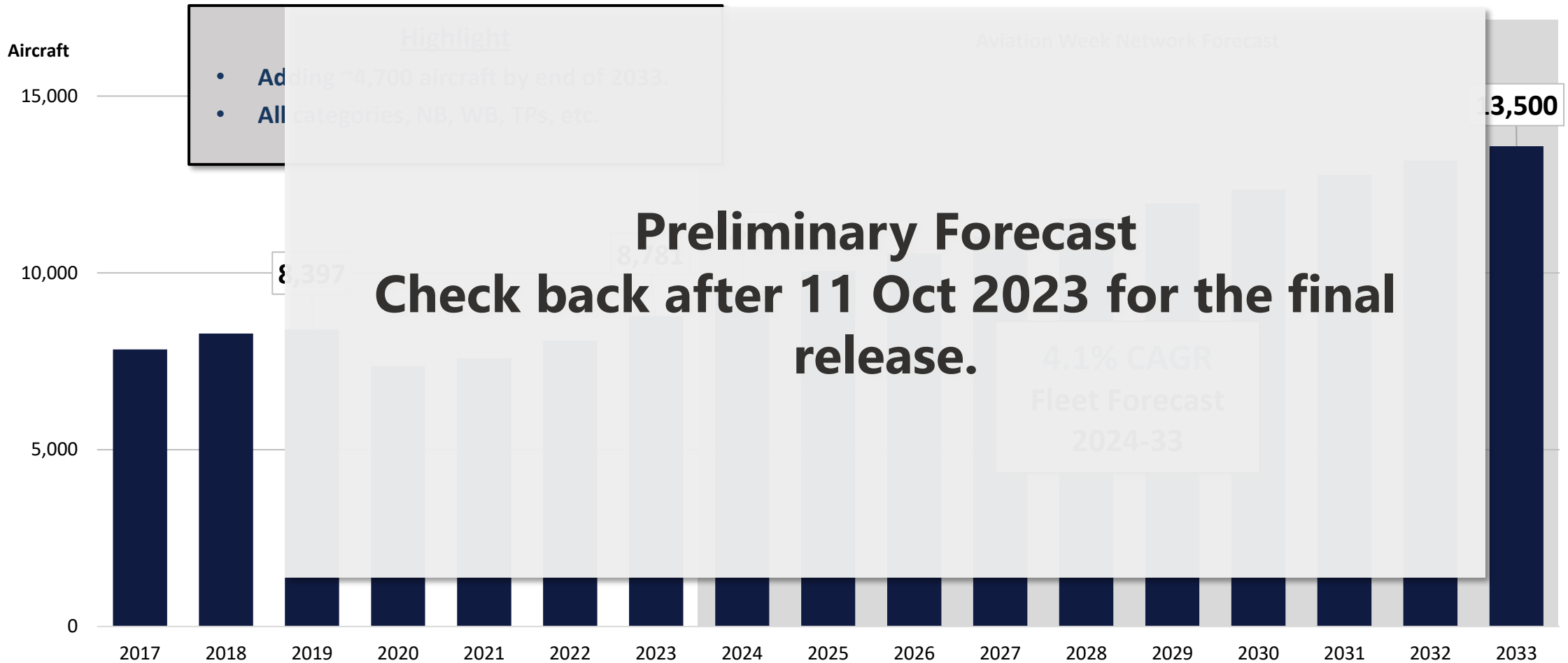
Long-term storage post-pandemic, active fleet, and under-utilized



**3.5k aircraft stored August 2023**

# Forecast: In-Service Commercial Aircraft Fleet – APAC & China

Preliminary forecasted active commercial aircraft, historical & forecasted

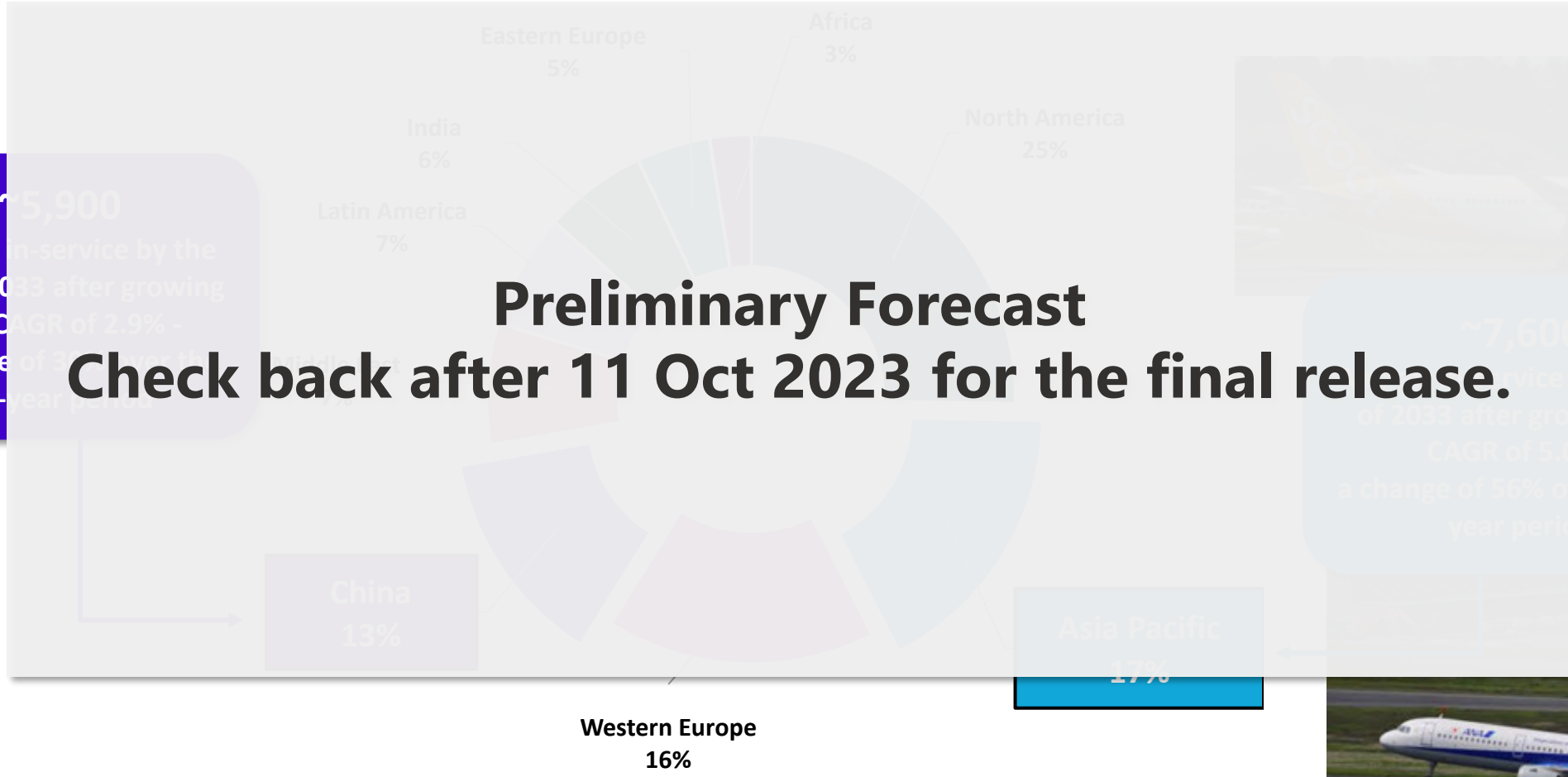


Source: 2024 Preliminary Commercial Aviation Fleet & MRO Forecast, Fleet Discovery, Aviation Week Network, Copyright 2023.



# Preliminary Forecast: Aircraft In-Service by Region (2033)

5,900  
 Aircraft in-service by the end of 2033 after growing at a CAGR of 2.9% - a change of 3% over the 10-year period



## Preliminary Forecast

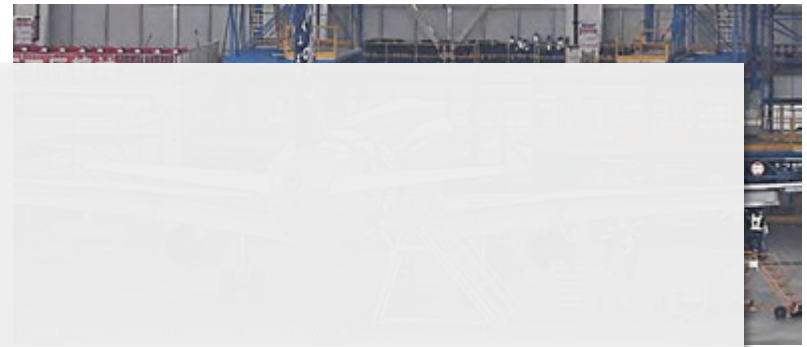
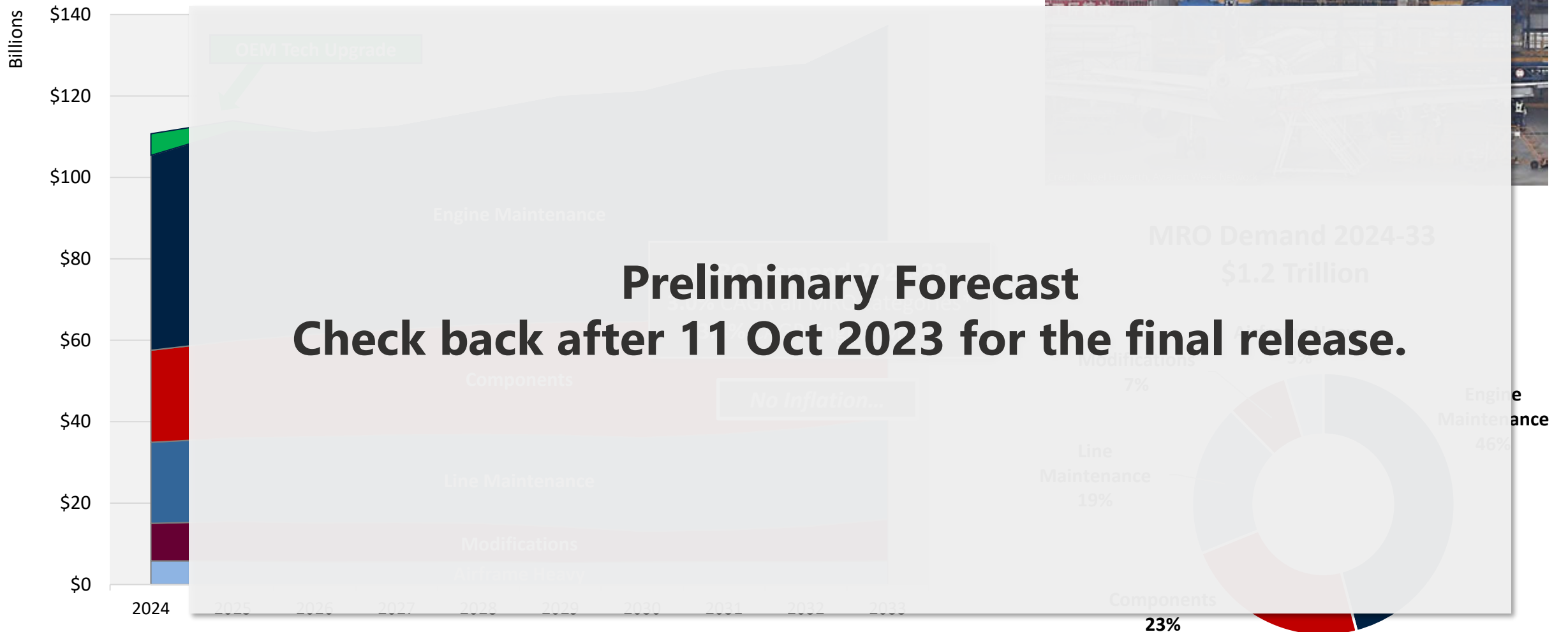
**Check back after 11 Oct 2023 for the final release.**

7,600  
 Aircraft in-service by the end of 2033 after growing at a CAGR of 5.0% - a change of 56% over the 10-year period



# Preliminary Forecast: MRO Demand Overview

Global MRO aftermarket by category, constant US dollars

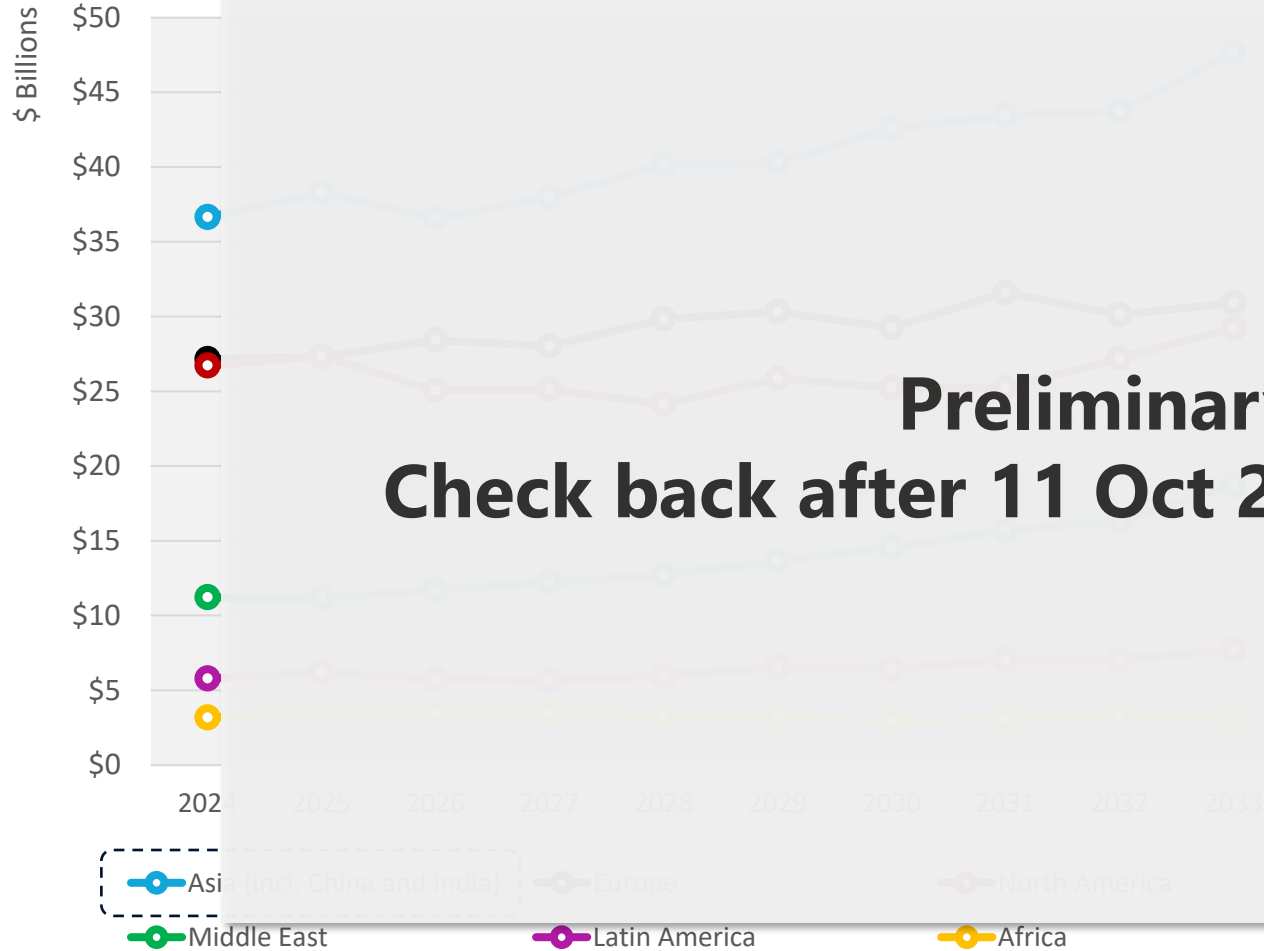


Source: 2024 Preliminary Commercial Aviation Fleet & MRO Forecast, Fleet Discovery, Aviation Week Network, Copyright 2023.

Note: \*2024 and 205 engine technical upgrade events not included in CAGR calculation.

# Forecast: MRO Demand by Major Region

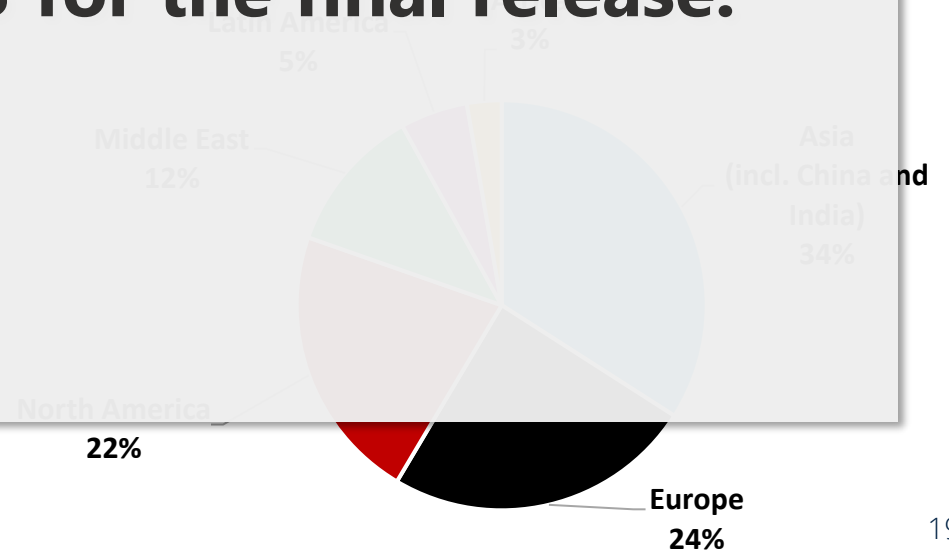
Regional trends, constant US dollars



**Preliminary Forecast**  
**Check back after 11 Oct 2023 for the final release.**

**Highlights**

- Asia at large is expected to generate \$404 billion of MRO demand.
- \$10.1 billion annual increase, 2024 v. 2033
- The fastest MRO demand rate of growth is the Middle East at 6.1% CAGR.
- \$18 billion lost to Russia-Ukraine war...



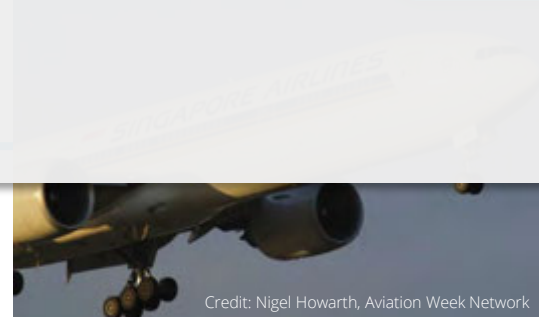
# Forecast: Regional MRO Demand, \$1.2 Trillion (2024-33)

1.7% CAGR  
 MRO demand;  
 Over 31,500 events by  
 the end of 2033

**Preliminary Forecast**  
**Check back after 11 Oct 2023 for the final release.**



2.8% CAGR  
 MRO demand;  
 Over 39,500 events by  
 the end of 2033



# Forecast: Engine Fleet & Overhaul Events – Asian Fleet

Preliminary New generation vs. legacy fleet share & SV event forecast

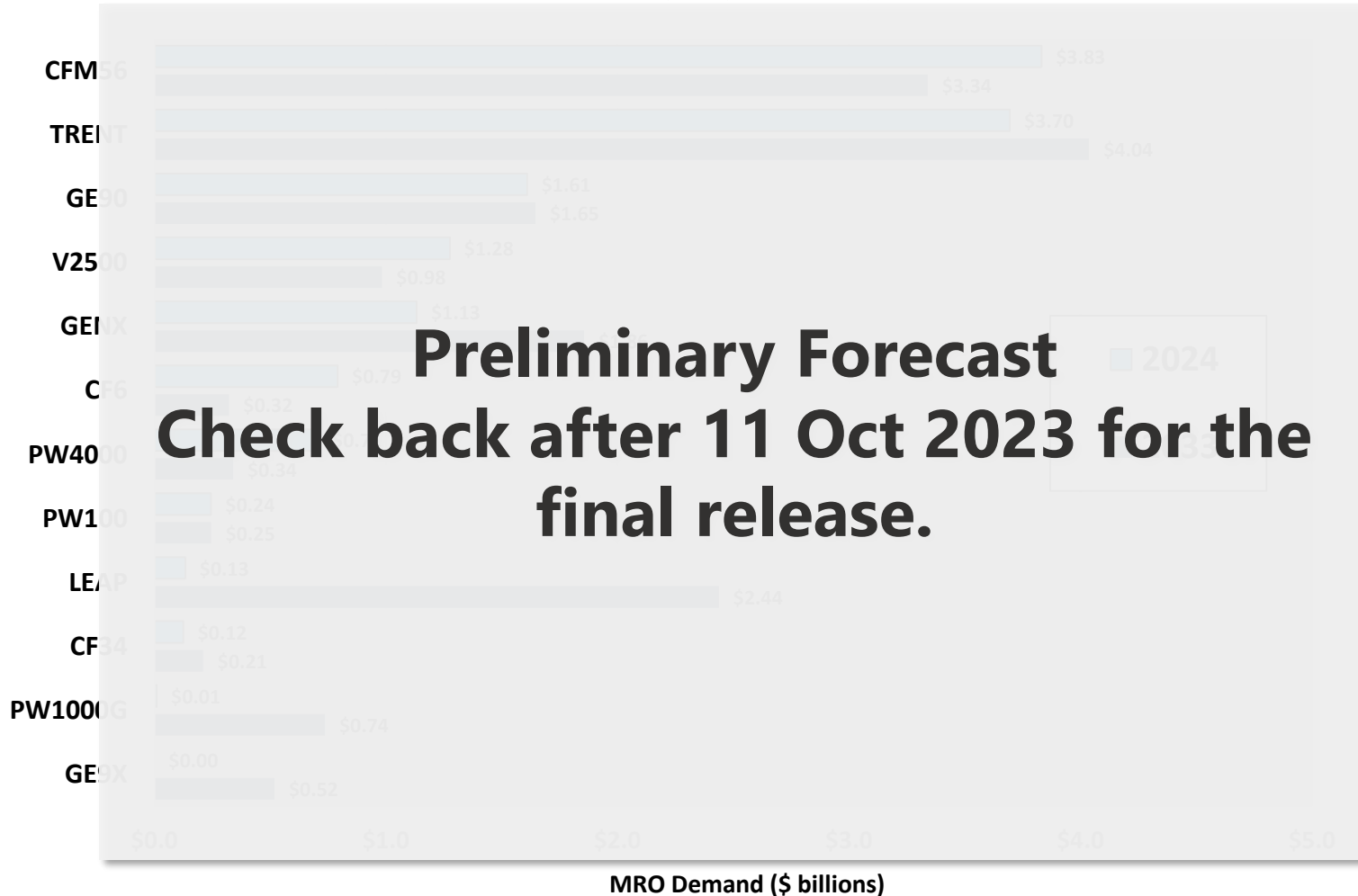


Source: 2024 Preliminary Commercial Aviation Fleet & MRO Forecast, Fleet Discovery, Aviation Week Network, Copyright 2023.

Notes: LLPs and 2024/2025 new generation engine technical upgrades not included. New generation engines include Leap, PW1000G, GENX, GE9X and Trent 1000/7000/XWB.

# Forecast: Engine MRO Demand – Asia Pacific & China

MRO Demand by Engine Family



## APAC & China

**CFM56  
Family**



**\$43.2B  
Demand  
10-year**

Credit: Brian Kough, Aviation Week Network

**Trent  
Family**



**\$44.5B  
Demand  
10-year**

Credit: Nigel Howarth, Aviation Week Network

**LEAP  
Family**



**\$8.4B  
Demand  
10-year**

Credit: Nigel Howarth, Aviation Week Network

Source: 2024 Preliminary Commercial Aviation Fleet & MRO Forecast, Fleet Discovery, Aviation Week Network, Copyright 2023.  
 Notes: LLPs and 2024/2025 new generation engine technical upgrades not included.



# Engine “Hospital Visits” - Preliminary

\$7.8 billion MRO aftermarket impacts for Pratt & Whitney GTF & CFM LEAP

**Issues:**

- GTF combustion/heat exchanger
- GTF HPT #1 and #2, HPC (2015-21 year of manufacture)
- LEAP fuel nozzle

## “Pratt & Whitney Bulletin Details Population Of PW1100Gs...”

Source: Aviation Daily, Aviation Week Network (August 25, 2023)

## “Revamped PW1100G Inspection Timing Could Ground 650 A320neos In Early 2024...”

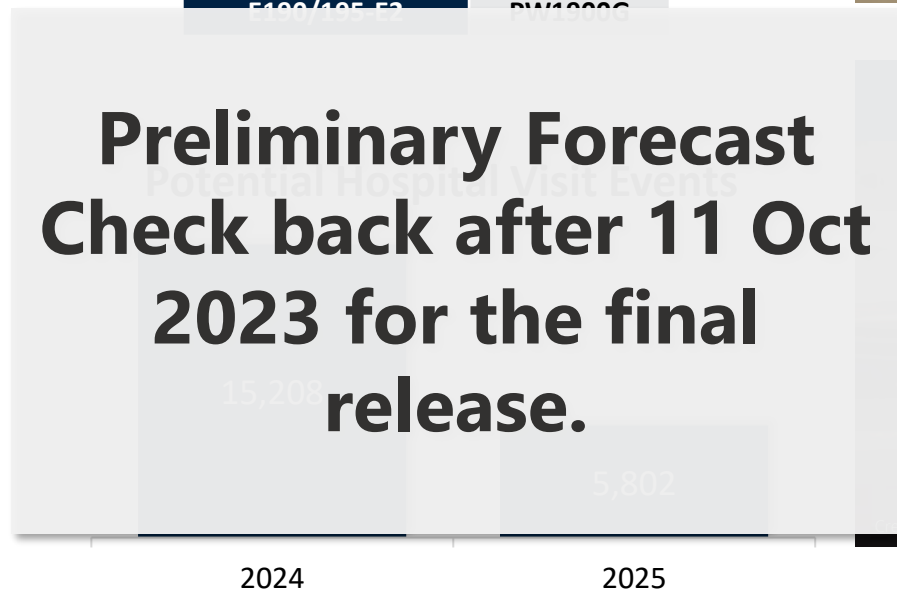
Source: Aviation Daily, Aviation Week Network (September 11, 2023)

## “Alaska Gains Insight To Leap Issues From Inherited A321s...”

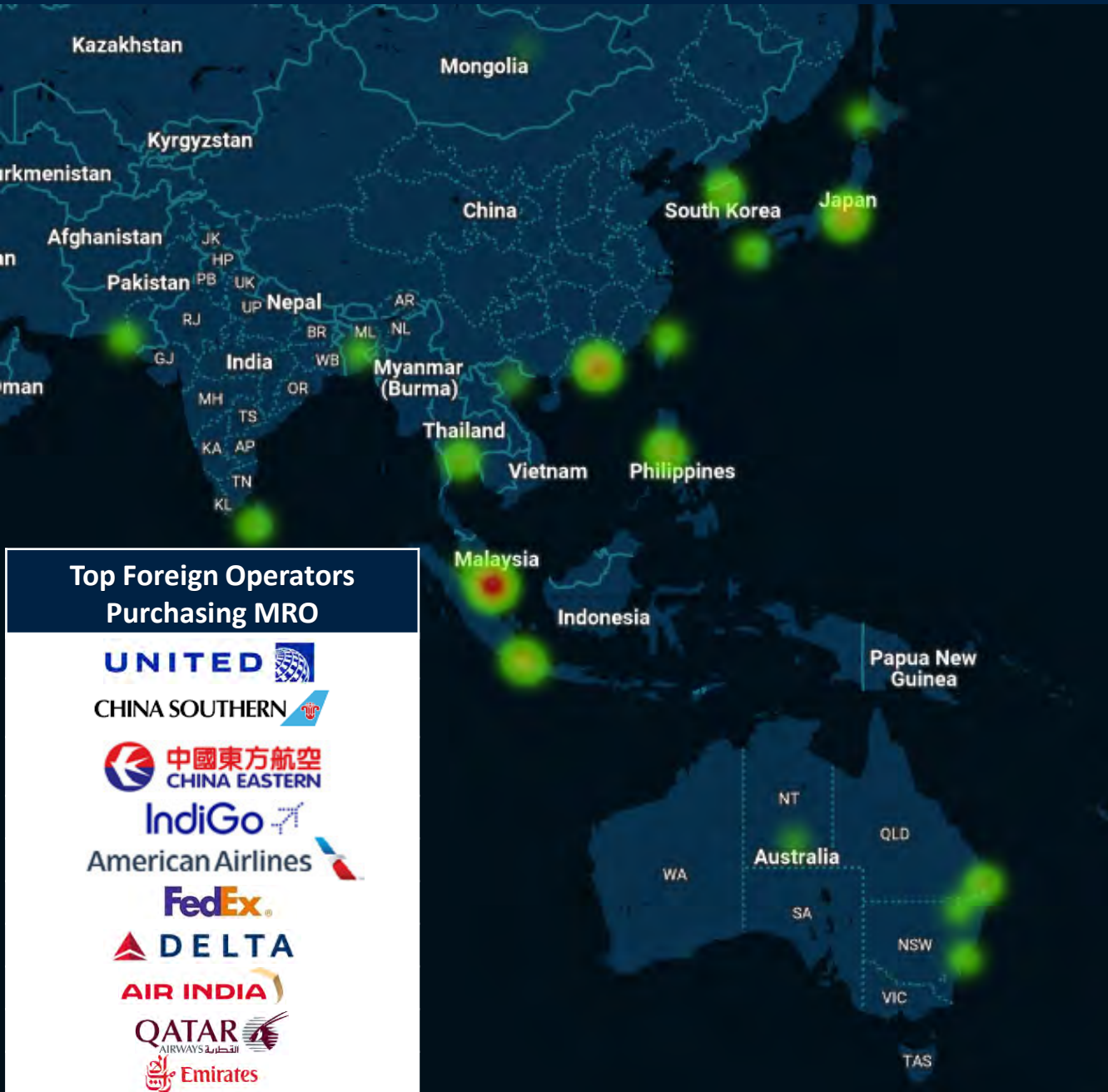
Source: Aviation Daily, Aviation Week Network (June 21, 2023)

### Aircraft/engine retrofits/fixes 2024/25

Commercial Aircraft	Engine Model
737 Max 7/8/9/10	LEAP-1B
A220-100/300	PW1500G
A319/320/321neo	LEAP-1A
A319/320/321neo	PW1100G-JM
C919	LEAP-1C
E175/E175-300	PW1700G



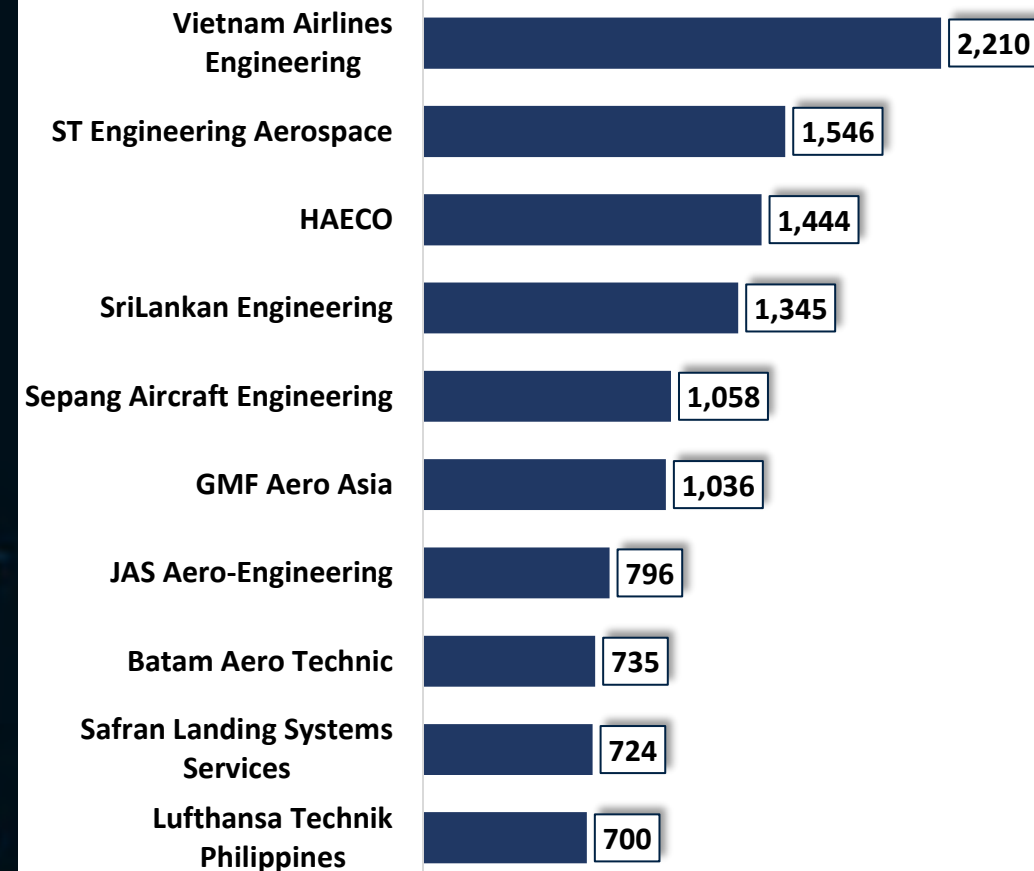
# Analysis: Top MRO Providers Asia-Pacific Excluding Mainland China & India



## Top Foreign Operators Purchasing MRO



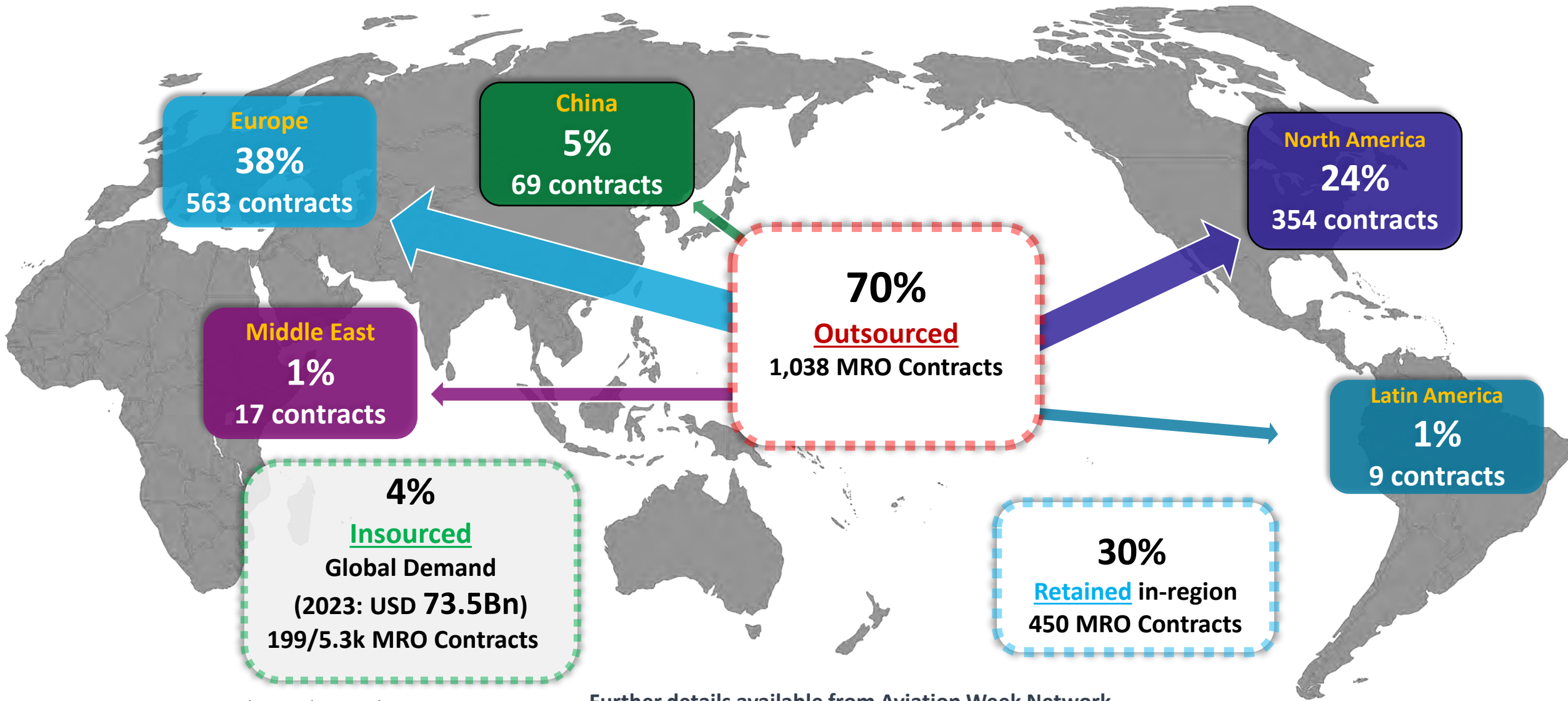
## MRO & Aircraft Under Contract





# MRO Contracts Outsourced By Asia-Pacific Operators

All MRO service types; ~4,400 commercial fleet



**PREDICTIVE INTELLIGENCE**

**THAT DRIVES RESULTS**



Fleets, Trends  
and Projections



MRO Future  
Demand



Predictive View  
of Market Share



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